SIBOGA-EXPEDITIE

Siboga-Expeditie

UITKOMSTEN

OP

ZOOLOGISCH, BOTANISCH, OCEANOGRAPHISCH EN GEOLOGISCH GEBIED

VERZAMELD IN

NEDERLANDSCH OOST-INDIË 1899—1900

AAN BOORD **H. M. SIBOGA** ONDER COMMANDO VAN

Luitenant ter zee 1e kl. G. F. TYDEMAN

UITGEGEVEN DOOR

Dr. MAX WEBER † en **Prof Dr. L. F. DE BEAUFORT**

Prof. in Amsterdam, Leider der Expeditie — Directeur van het Zoölogisch Museum Amsterdam

(met medewerking van de Maatschappij ter bevordering van het Natuurkundig Onderzoek der Nederlandsche Koloniën)

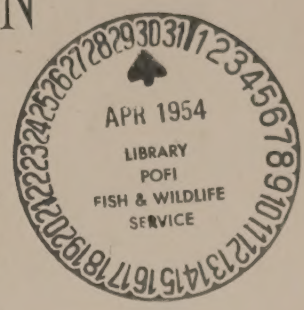
LEIDEN
E. J. BRILL
1947

FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

Siboga-Expeditie
XXXIXa[8]

THE

DECAPODA OF THE SIBOGA EXPEDITION



PART IX

THE HIPPOLYTIDAE AND RHYNCHOCINETIDAE

COLLECTED BY THE SIBOGA AND SNELLIUS EXPEDITIONS
WITH REMARKS ON OTHER SPECIES

BY

DR. L. B. HOLTHUIS
(Rijksmuseum van Natuurlijke Historie, Leiden)

With 15 figs. in the text

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THE HIPPOLYTIDAE AND RHYNCHOCINETIDAE COLLECTED BY THE SIBOGA AND SNELLIUS EXPEDITIONS WITH REMARKS ON OTHER SPECIES

BY

Dr. L. B. HOLTHUIS

Rijksmuseum van Natuurlijke Historie, Leiden

With 15 textfigures

INTRODUCTION

The larger part of the Decapoda Macrura collected by the Siboga Expedition 1899-1900, have been dealt with by Dr. H. J. H a n s e n and Dr. J. G. d e M a n. Dr. H a n s e n studied the family Sergestidae (Siboga Exped. monogr. XXXVIII, 1919, pp. 1-65, pls. 1-5), while the other groups were entrusted to Dr. d e M a n. When this much regretted Dutch carcinologist died on January 19, 1930, the following Siboga monographs had appeared from his hand:

The Decapoda of the Siboga Expedition. Part I. Family Penaeidae. Siboga Exped. monogr. XXXIXa, 1911, pp. 1-131.

The Decapoda of the Siboga Expedition. Part II. Family Alpheidae. Siboga Exped. monogr. XXXIXa[1], 1911, pp. 132-465.

The Decapoda of the Siboga Expedition. Plates of Part I. Family Penaeidae. Siboga Exped. Suppl. to monogr. XXXIXa, 1913, pls. 1-10.

The Decapoda of the Siboga Expedition. Plates of Part II. Family Alpheidae. Siboga Exped. Suppl. to monogr. XXXIXa[1], 1915, pls. 1-23.

The Decapoda of the Siboga Expedition. Part III. Families Eryonidae, Palinuridae, Scyllaridae and Nephropsidae. Siboga Exped. monogr. XXXIXa[2], 1916, pp. 1-122, pls. 1-4.

The Decapoda of the Siboga Expedition. Part IV. Families Pasiphaeidae, Stylodactylidae, Hoplophoridae, Nematocarcinidae, Thalassocaridae, Pandalidae, Psalidopodidae, Gnathophyllidae, Processidae, Glyphocrangonidae and Crangonidae. Siboga Exped. mon. XXXIXa[3], 1920, pp. 1-318, pls. 1-25.

The Decapoda of the Siboga Expedition. Part V. On a Collection of Macrurous Decapod Crustacea of the Siboga Expedition, chiefly Penaeidae and Alpheidae. Siboga Exped. monogr. XXXIXa[4], 1922, pp. 1-51, pls. 1-4.

The Decapoda of the Siboga Expedition. Part VI. The Axiidae of the Siboga-Expedition. Siboga Exped. monogr. XXXIXa[5] 1925, pp. i-ii, 1-127, pls. 1-10.

The Decapoda of the Siboga Expedition. Part VII. The Thalassinidae and Callianassidae collected by the Siboga-Expedition with some remarks on the Laomediidae. Siboga Exped. monogr. XXXIXa[6], 1928, pp. 1-187, pls. 1-20.

This left only the families Atyidae, Hippolytidae, Rhynchocinetidae and Palaemonidae of the tribe Caridea and the family Stenopodidae of the tribe Stenopodidea unstudied. I should like to express here my sincere gratitude to Prof. Dr. L. F. de Beaufort, who entrusted me with the study of those families. Part of the results of that study is given in the present volume dealing with the families Hippolytidae and Rhynchocinetidae.

Thirty years after the cruises of the Siboga Expedition, a new expedition on board H.M.S. "Willebrord Snellius" explored the waters of the eastern parts of the Netherlands East Indies. Though the main purpose of the Snellius Expedition, 1929-1930, was to make hydrological and geological investigations, very important biological material was collected by the biologist of the expedition Prof. Dr. H. Boschma, who kindly placed the Decapoda Macrura at my disposal, for which I wish to tender my best thanks to him.

As the Siboga and Snellius Expeditions explored almost exactly the same region, I thought it best to combine their results concerning the families Atyidae, Hippolytidae, Rhynchocinetidae, Palaemonidae and Stenopodidae. Therefore in the present paper the Hippolytid and Rhynchocinetid material of both expeditions is dealt with; moreover the indowestpacific material of these families, present in the Rijksmuseum van Natuurlijke Historie at Leiden and the Zoological Museum at Amsterdam, is inserted here, as much of that material is used for comparison and as it contains valuable data for the extension of our knowledge of the rich but rather badly known Caridean fauna of the Malay Archipelago.

Following De Man's example I give at the beginning of each family a key to the genera (as far as needed) and a list of all species known to me. Furthermore a list of species incertae, of nomina nuda and of species described originally as belonging to the present families, but afterwards removed to other groups is given.

In the text dealing with the material species are mentioned also, which are not represented in the collections studied, but which are recorded in literature from the Netherlands East Indies, so that the present paper provides a list of all species known from that region. Some species not known from the Netherlands Indies are dealt with here too, because they are interesting from a systematical or from a nomenclatorial point of view. I tried to give a complete list of references of every species dealt with.

In the orthography of the geographic names within the Netherlands East Indies, the official spelling recommended in the "Lijst van de voornaamste aardrijkskundige namen in den Nederlandsch-Indischen Archipel, 1923" is followed, the names being almost entirely spelled like those used in: BOSCHMA, H., 1936. Biological Data. The Snellius Expedition, vol. 6, pp. 1-29, textfigs. 1-11, 1 map, but often quite different from those given in: WEBER, M., 1902. Introduction et description de l'Expédition. Siboga Exped. monogr. I, pp. 1-159, 1-16. many textfigs, 2 maps, in which two papers the stations and data of both expeditions may be found.

The following species were collected by the Siboga and Snellius Expeditions:

	Siboga Expedition	Snellius Expedition
Hippolytidae		
	Saron marmoratus (Oliv.)	*Saron marmoratus* (Oliv.)
	Saron neglectus De Man	*Saron neglectus* De Man
	Lebbeus indicus nov. spec.	
	Thor maldivensis Borr.	*Thor maldivensis* Borr.
	Thor paschalis (Hell.)	*Thor paschalis* (Hell.)
	Thor amboinensis (De Man)	*Thor amboinensis* (De Man)
		Thor intermedius nov. spec.
	Hippolyte ventricosa H. M. E.	*Hippolyte ventricosa* H. M. E.
	Latreutes mucronatus (Stimps.)	*Latreutes mucronatus* (Stimps.)
	Angasia armata (Pauls.)	*Angasia armata* (Pauls.)
	Gelastocaris paronae (Nob.)	
	Lysmata dentata (De Haan)	*Lysmata dentata* (De Haan)
		Lysmata trisetacea (Hell.)
	Hippolysmata vittata Stimps.	*Hippolysmata vittata* Stimps.
	Hippolysmata kükenthali (De Man)	
	Hippolysmata prima (Borr.)	
	Merguia oligodon (De Man)	*Merguia oligodon* (De Man)
Rhynchocinetidae		
	Rhynchocinetes rugulosus Stimps.	*Rhynchocinetes rugulosus* Stimps.

For most of the drawings in the present paper I am largely indebted to Mr. P. van 't Zelfde.

Family **Hippolytidae** Bate, 1888

The first Hippolytid described in literature, which identity is certain, is *Eualus macilentus* described and figured by Seba (Thesaur., vol. 3, p. 55, pl. 21 figs. 9, 10) as "Squille Mâle et Femelle".

In binary nomenclature the first species of Hippolytidae were described under the generic names *Astacus, Cancer,* and *Palaemon* (e.g., *Astacus groenlandicus* Fabr., 1775; *Cancer aculeatus* O. Fabr., 1780; *Palaemon fucorum* Fabr., 1798). In 1814 the genus *Hippolyte* was erected by Leach and afterwards numerous new genera were created for the various species, which were discovered in the course of time. So that in the beginning of the present century the family Hippolytidae consisted of a chaos of genera, the relation between which was little or not at all known. It is the merit of Calman (1906) to have shown the chief principles for distinguishing the genera and to have indicated their relation. These principles are adopted in the following key, in which also is made use of Kemp's (1914) key to the genera of the present family inhabiting the indo-westpacific region. After the key a list of all species of Hippolytidae known to me at present will be given, with their distribution and synonyms.

This list, however, must be considered to be only as complete as possible for the species published up to January 1, 1943 as the volumes of the Zoological Record from 1943 and later are not at my disposal.

Key to the genera and subgenera of Hippolytidae

1.	Arthrobranchs present at the bases of the first four pairs of pereiopods	2
	Bases of the pereiopods without arthrobranchs	5
2.	A movable toothlike process is present at the bases of the uropods	3
	No movable toothlike process at the bases of the uropods	4
3.	Mandible provided with incisorprocess	*Saron*
	Mandible without incisorprocess	*Nauticaris*
4.	Mandible with incisorprocess	*Merhippolyte*
	Mandible without incisorprocess	*Ligur*
5.	Mandible with palp	6
	Mandible without palp	15
6.	Supraorbital spines present on carapace	7
	Supraorbital spines absent	10
7.	Mandibular palp threejointed	*Alope*
	Mandibular palp twojointed	8
8.	Carapace with two or more supraorbital spines at each side. Third maxillipede provided with an exopod	*Spirontocaris*
	Carapace with only one supraorbital spine at each side. Third maxillipede without exopod	9
9.	Abdominal segments dorsally rounded. Both antennal and pterygostomial spines present. No branchiostegal spine	*Lebbeus*
	Abdominal segments 1 and 5 with two, 2, 3, and 4 with one dorsal carina. One large branchiostegal spine present on carapace. No antennal or pterygostomial spines	*Birulia*
10.	Mandibular palp composed of three segments	11
	Mandibular palp composed of one or two segments	13
11.	Mandible without incisorprocess	*Barbouria*
	Mandible with incisorprocess	12
12.	Carpus of second pereiopod twojointed	*Caridion*
	Carpus of second pereiopod with 9-12 joints	*Chorismus*
13.	Carpus of second pereiopod with 4 joints. Mandibular palp consisting of one segment	*Leontocaris*
	Carpus of second pereiopod with 7 joints. Mandibular palp consisting of two segments	14
14.	Third maxillipede provided with an exopod	*Eualus*
	Third maxillipede without exopod	*Heptacarpus*
15.	Mandible with incisorprocess	16
	Mandible without incisorprocess	20
16.	Carpus of second pereiopod composed of 2 or 3 segments	17
	Carpus of second pereiopod composed of 6 or 7 segments	18
17.	Carpus of second pereiopod twojointed	*Phycocaris*

Carpus of second pereiopod threejointed . . . . . *Hippolyte*

18. Dactylus of first pereiopod less than 1/6 of the length of propodus. Telson with about 20 spinules along each lateral margin . . . . . *Cryptocheles*

Dactylus of first pereiopod 1/3 or more of the length of propodus. Telson with less than five pairs of spinules, which are placed at some distance from the lateral margins 19

19. Epipods present on the first two pairs of pereiopods. No movable plate at the anterior margin of the third segment of the antennular peduncle . . . . . *Thoralus*

No epipods present at the bases of the pereiopods. Third segment of the antennular peduncle with a broad movable plate at the upper part of the anterior margin . . . . . *Thor*

20. Carpus of second pereiopod composed of two or three segments 21

Carpus of second pereiopod multiarticulate 25

21. Carpus of second pereiopod twojointed . . . . . *Trachycaris*

Carpus of second pereiopod threejointed 22

22. Dactylus of last three pairs of pereiopods bearing a cluster of large teeth. Outer margin of scaphocerite provided with small movable teeth. Lower border of abdominal pleurae denticulate . . . . . *Gelastocaris*

Dactylus of last three pairs of pereiopods normal in shape. Outer margin of scaphocerite without teeth. Abdominal pleurae without small marginal denticles 23

23. Third maxillipede with exopod . . . . . *Latreutes*

Third maxillipede without exopod 24

24. Epipods on first four pereiopods. Anterolateral angle of carapace with a series of small spines . . . . . *Paralatreutes*

No epipods on the pereiopods. Anterolateral angle of carapace entire . . . *Angasia*

25. Abdominal segments ending in large median posterior spines. Pleurae ending in one or two sharp points. Carapace with longitudinal carinae . . . . . *Mimocaris*

Abdominal segments without large posterior spines. Pleurae rounded. Carapace smooth 26

26. Supraorbital spines present on carapace . . . . . *Bythocaris*

Supraorbital spines absent 27

27. Third maxillipede with exopod 28

Third maxillipede without exopod . . . . . *Merguia*

28. Upper antennular flagellum biramous . . . . . *Lysmata*

Upper antennular flagellum uniramous . . . . . *Hippolysmata*

a. Rostrum longer than carapace, provided with a dorsal basal crest of teeth, which are closely packed together . . . . . Subgen. *Exhippolysmata*

Rostrum shorter than carapace; teeth divided more or less regularly over its dorsal margin, never forming a basal crest . . . . . b

b. Epipods present on first four pereiopods . . . . . Subgen. *Hippolysmata*

No epipods at the bases of the pereiopods . . . . . Subgen. *Lysmatella*

List of the species of Hippolytidae known on January 1, 1943

Saron Thallwitz, 1891

Type: *Hippolyte gibberosus* H. Milne Edwards.

marmoratus (Olivier, 1811). Synonyms: ? *Alpheus marmoratus* Latreille, 1806; *Palaemon marmoratus* Olivier, 1811; *Alpheus marmoratus* Lamarck, 1818; *Hippolyte gibberosus* H. Milne Edwards, 1837 b; *Hippolyte marmoratus* H. Milne Edwards, 1837 b; *Hippolyte Leachii* Guérin, 1838; *Hippolyte gibbosus* Dana, 1852 b; *Hippolyte Hemprichii* Heller, 1861; *Hyppolite Kraussii* Bianconi, 1869; *Saron gibberosus* Thallwitz, 1891; *Nauticaris grandirostris* Pearson, 1905; *Spirontocaris marmorata* Rathbun, 1906; *Spirontocaris gibberosa* Balss, 1914 a. Distribution: Throughout the indowestpacific region from Red Sea and South Africa to Japan and Hawaii. Litoral form. (Vid. p. 25).

neglectus De Man, 1902. Distribution: Indo-westpacific region from Red Sea and Madagascar to Japan and New Caledonia. Litoral form. (Vid. p. 30).

Nauticaris Bate, 1888 (Vid. p. 31)

Type: *Nauticaris marionis* Bate

brucei Stebbing, 1914 b. Distribution: Gough Island, S. Atlantic Ocean. 180 m depth.

magellanica (A. Milne Edwards, 1891). Synonyms: *Hippolyte magellanicus* A. Milne Edwards, 1891; *Merhippolyte magellanicus* Hodgson, 1902. Distribution: Falkland Islands; Cape Horn region (Orange Bay, Picton Island and Grévy Island). 6-65 m depth.

marionis Bate, 1888. Synonyms: *Hippolyte Stewarti* Thomson, 1889; *Hippolyte australis* Hodgson, 1902; *Merhippolyte australis* Hodgson, 1902; *Nauticaris Stewarti* Thomson, 1903. Distribution: Falkland Islands; Marion and Edward Islands (S. Indian Ocean); Campbell, Auckland and Bounty Islands (near New Zealand). 20-255 m depth.

marionis Bate var. *chilensis* Doflein & Balss, 1912. Distribution: Falkland Islands; Magellan Strait; Cavancha (Chile). 2 m depth.

Merhippolyte Bate, 1888 (Vid. p. 31)

Type: *Merhippolyte agulhasensis* Bate.

agulhasensis Bate, 1888. Distribution: Off the coast of S. Africa from Angola to Natal. 70-318 m depth.

calmani Kemp & Sewell, 1912. Distribution: Off the southwestcoast of India. 400-494 m depth.

kauaiensis (Rathbun, 1906). Synonym: *Spirontocaris kauaiensis* Rathbun, 1906. Distribution: Hawaiian Archipelago. 100-650 m depth.

Ligur Sarato, 1885

Synonyms: *Ligus* Lucas, 1885; *Parhippolyte* Borradaile, 1899.

Type: *Ligur Edwardsii* Sarato.

ensiferus (Risso, 1816). Synonyms: *Palemon Ensiferus* Risso, 1816; *Alpheus ensiferus* Risso, 1826;

Ligur Edwardsii Sarato, 1885; *Ligus Edwardsii* Lucas, 1885. Distribution: Western Mediterranean, ? Western Indian Ocean. 360-772 m depth. (Vid. p. 32).

uveae (Borradaile, 1899). Synonym: *Parhippolyte uveae* Borradaile, 1899. Distribution: Western Indian Ocean; Aldabra; Halmahera; Loyalty Islands; Fiji. In pools near the shore. (Vid. p. 32).

Barbouria Rathbun, 1912

Type: *Barbouria poeyi* Rathbun.

cubensis (Von Martens, 1872). Synonyms: *Hippolyte Cubensis* Von Martens, 1872; *Hippolysmata cubensis* Kingsley, 1878 a; *Barbouria poeyi* Rathbun, 1912. Distribution: Cuba. In caves near the shore. (Vid. p. 33).

Caridion Goes, 1864

Synonym: *Doryphorus* Norman, 1861 (nomen praeocc.).
Type: *Hippolyte Gordoni* Bate.

gordoni (Bate, 1858) Synonyms: *Hippolyte Gordoni* Bate, 1858; *Hippolyte Gordoniana* Bate, 1859; *Doryphorus Gordoni* Norman, 1861; *Caridion Gordoniana* Wedemeyer, 1912. Distribution: Northern Norway and Iceland southward to the Bay of Biscay; eastcoast of America north of Cape Cod. 38-400 m depth.

steveni Lebour, 1930. Distribution: Plymouth; Liverpool. Litoral form. Probably often confused with the former species.

Leontocaris Stebbing, 1905

Type: *Leontocaris paulsoni* Stebbing.

lar Kemp, 1906. Distribution: Off S. W. Ireland. 900-1100 m depth.

paulsoni Stebbing, 1905. Distribution: Off Cape Lion Head, S. Africa. 240 m depth.

Alope White, 1847 b

Synonym: *Hetairocaris* De Man, 1890.
Type: *Alope palpalis* White.

orientalis (De Man, 1890). Synonyms: *Hetairocaris orientalis* De Man, 1890; *Hippolyte ponapensis* Ortmann, 1890; *Alope australis* Baker, 1904; *Spirontocaris orientalis* Kemp, 1914. Distribution: Natal; Lower Burma; Caroline Islands; West and South Australia; New South Wales. Litoral species. (Vid. p. 33).

spinifrons (H. Milne Edwards, 1837). Synonyms: *Hippolyte spinifrons* H. Milne Edwards, 1837 b; *Alope palpalis* White, 1847 b: *Merhippolyte spinifrons* Thomson, 1903. Distribution: New Zealand. (Vid. p. 34).

Spirontocaris Bate, 1888 (Vid. p. 36)

Synonym: *Sowerbyus* Hoek, 1887 (nom. nud.).
Type: *Cancer spinus* Sowerby.

arcuata Rathbun, 1902 c. Synonym: *Hippolyte arcuata* Williamson, 1915. Distribution: Westcoast of

N. America from Pribilof Islands to Fuca Strait; Arctic Canada (Delphin & Union Strait); Japanese Sea. 5-620 m depth.

brevidigitata Kobjakova, 1935. Distribution: Eastcoast of Siberia from Nelma Bay to the Gulf of Peter the Great. 75-1380 m depth.

dalli Rathbun, 1902 c. Synonym: *Hippolyte dalli* Williamson, 1915. Distribution: Arctic Alaska to Sitka; Aleutian Islands; Patience Bay (Sakhalin). 10-36 m depth.

holmesi nom. nov. Synonyms: *Spirontocaris bispinosa* Holmes, 1900; *Hippolyte bispinosa* Williamson, 1915 (non De Haan, 1841). Distribution: Westcoast of N. America from Yes Bay (Alaska) to San Diego (California). 23-380 m depth. (Vid. p. 38).

lamellicornis (Dana, 1852 a). Synonym: *Hippolyte lamellicornis* Dana, 1852 a. Distribution: Westcoast of America from Unalaska (Aleutian Islands) to Point Arena (California). 16-140 m depth.

lilljeborgii (Danielssen, 1859). Synonyms: ? *Astacus histrio* Fabricius, 1775;? *Cancer Histrio* Gmelin, 1789; *Hippolyte Lilljeborgii* Danielssen, 1859; *Hippolyte securifrons* Norman, 1862; *Spirontocaris securifrons* Norman, 1893; *Spirontocaris spinus* var. *lilljeborgi* Kemp, 1910; *Hippolyte spinus* var. *lilljeborgi* Williamson, 1915. Distribution: From Spitsbergen and the Murman coast southward to the southcoast of England; Iceland; Greenland; eastcoast of N. America from Nova Scotia to Massachusetts Bay; Arctic Alaska. 20-1200 m depth.

mororani Rathbun, 1902 b. Synonym: *Spirontocaris ochotensis* var. *mororani* Derjugin & Kobjakova, 1935. Distribution: Northern Japan. 9-247 m depth.

murdochi Rathbun, 1902 c. Synonym: *Hippolyte murdachi* Williamson, 1915. Distribution: Arctic Alaska; Kamchatka; Sea of Okhotsk; Patience Bay (Sakhalin). 22-50 m depth.

ochotensis (Brandt, 1851). Synonym: *Hippolyte ochotensis* Brandt, 1851. Distribution: Bering Sea to Sitka (S. Alaska); Aleutian Islands; Kamchatka; Sea of Okhotsk; N. Japan. 9-36 m depth.

onagawaensis Yokoya, 1939. Distribution: N. E. Honshu, Japan. 4.6-7.5 m depth.

pectinifera (Stimpson, 1860). Synonym: *Hippolyte pectinifera* Stimpson, 1860. Distribution: Japan (Hakodate, Mutsu Bay, Tokyo Bay and Sagami Bay). 130 m depth.

phippsii (Krøyer, 1841). Synonyms: *Hippolyte turgida* Krøyer, 1841; *Hippolyte Phippsii* Krøyer, 1841; *Hippolyte vibrans* Stimpson, 1874; *Spirontocaris turgida* Stebbing, 1900. Distribution: Circumpolar, southward to Northern Norway, Cape Cod (eastcoast of N. America), the Shumagin Islands (westcoast of N. America) and Plover Bay (Siberian eastcoast). 11-225 m depth. (Vid. p. 38).

prionota (Stimpson, 1864). Synonym: *Hippolyte prionota* Stimpson, 1864. Distribution: Bering Sea to California; Japan. 13-137 m depth. (Vid. p. 23, footnote).

sica Rathbun, 1902 c. Distribution: Off California from San Diego to Point Arena. 380-835 m depth.

snyderi Rathbun, 1902 c. Synonym: *Hippolyte snyderi* Williamson, 1915. Distribution: Puget Sound to Lower California. 80-140 m depth.

spinus (Sowerby, 1805). Synonyms: ? *Astacus histrio* Fabricius, 1775; ? *Cancer Histrio* Gmelin, 1789; *Cancer Spinus* Sowerby, 1805; *Astacus Spinus* Pennant, 1812; *Alpheus Spinus* Leach, 1814; *Hippolyte Sowerbaei* Leach, 1817; *Hippolyte spinus* White, 1847; *Hippolyte spina* Stimpson, 1860; *Sowerbyus spinus* Hoek, 1887; *Spirontocaris spina* Rathbun, 1904. Distribution: Circumpolar, southward to the northern North Sea, Massachusetts Bay (eastcoast of America), Alaska Peninsula and Siberian eastcoast. 16-400 m depth.

spinus var. *intermedia* Makarov, 1941. Distribution: N. E. Siberian coast.
truncata Rathbun, 1902 c. Distribution: Oregon (Westcoast of N. America). 90 m depth.

Lebbeus White, 1847 a

Synonyms: *Hetairus* Bate, 1888; *Birulaecaris* Dons, 1915.
Type: *Lebbeus orthorhynchus* (Leach MSS) White.

brandtii (Brashnikov, 1907). Synonyms: *Hetairus brandtii* Brashnikov, 1907; *Spirontocaris brandti* Balss, 1914 a. Distribution: Sea of Okhotsk; Sagami Bay. Depth: 12-20 m.

compressus nom. nov. Synonym: *Spirontocaris gibberosa* Yokoya, 1933 (non Balss, 1914 pro *Saron marmoratus*). Distribution: Off Oiwoya-zaki, Japan. 232 m depth. (Vid. p. 40).

grandimanus (Brashnikov, 1907). Synonym: *Hetairus grandimanus* Brashnikov, 1907. Distribution: Kamchatka Sea; off south- and eastcoast of Sakhalin. 19-118 m depth.

groenlandicus (Fabricius, 1775). Synonyms: *Astacus Groenlandicus* Fabricius, 1775; *Cancer aculeatus* O. Fabricius, 1780; *Cancer groenlandicus* Gmelin, 1789; *Alpheus Aculeatus* Sabine, 1821; *Hippolyte aculeatus* Ross, 1835; *Hippolite armata* Owen, 1839; *Hippolite cornuta* Owen, 1839; *Hippolyte groenlandica* Miers, 1877; *Spirontocaris groenlandica* Walker, 1898 a; *Hetairus groenlandicus* Brashnikov, 1907. Distribution: Greenland southward to Massachusetts Bay; Arctic Canada; Bering Sea to Puget Sound; Sea of Okhotsk. 2-210 m depth.

indicus nov. spec. Distribution: Bali Sea. 1018 m depth. (Vid. p. 40).

lagunae (Schmitt, 1921). Synonym: *Spirontocaris lagunae* Schmitt, 1921. Distribution: Laguna Beach (California). 22-27 m depth.

microceros (Krøyer, 1841). Synonyms: *Hippolyte microceras* Krøyer, 1841; *Spirontocaris microceros* Hansen, 1908. Distribution: West Greenland coast; New Brunswick.

polaris (Sabine, 1821). Synonyms: ? *Astacus varius* Fabricius, 1781; ? *Cancer varius* Gmelin, 1789; *Alpheus polaris* Sabine, 1821; *Hippolyte polaris* Ross, 1835; *Hippolyte borealis* Ross, 1835; *Lebbeus orthorhynchus* (Leach MSS) White, 1847 a; *Hippolyte St. Pauli* Brandt, 1851; *Hippolyte cultellata* Norman, 1867; *Hippolyte incerta* Buchholz, 1874; *Hippolyte Amazo* Pfeffer, 1886; *Hippolyte projecta* Bate, 1888; *Hetairus Gaimardii* Bate, 1888; *Hetairus tenuis* Bate, 1888; *Hetairus debilis* Bate, 1888; *Spirontocaris polaris* Norman, 1893; *Hippolyte mysis* Birula, 1898; *Hetairus polaris* Brashnikov, 1907; *Spirontocaris incerta* Stephensen, 1913; *Birulaecaris mysis* Dons, 1915. Distribution: Circumpolar, southward to the Skagerrak and Hebrides, Cape Cod (eastcoast of N. America), Bering and Okhotsk Seas, Aleutian Islands. 0-930 m. (Vid. p. 38).

profundus (Rathbun, 1906). Synonym: *Spirontocaris profunda* Rathbun, 1906. Distribution: Hawaiian Archipelago. 1370-1800 m depth.

schrenckii (Brashnikov, 1907). Synonym: *Hetairus schrenckii* Brashnikov, 1907. Distribution: Sea of Okhotsk; eastcoast of Sakhalin. 43-100 m depth.

unalaskensis (Rathbun, 1902 c). Synonyms: *Spirontocaris unalaskensis* Rathbun, 1902 c; *Hippolyte unalaskensis* Williamson, 1915; *Hetairus unalaskensis* Derjugin & Kobjakova, 1935. Distribution: Unalaska; Japanese Sea. 500-630 m depth. (Vid. p. 39).

vicinus (Rathbun, 1902 c). Synonyms: *Spirontocaris vicina* Rathbun, 1902 c; *Hippolyte vicina* Williamson, 1915. Distribution: North of Unalaska. 556-730 m depth.

washingtonianus (Rathbun, 1902 c). Synonym: *Spirontocaris washingtoniana* Rathbun, 1902 c. Distribution: Sea Lion Rock (Washington) and San Clemente Island (California). 806-1230 m depth.

zebra (Leim, 1921). Synonym: *Spirontocaris zebra* Leim, 1921. Distribution: Nova Scotia; New Brunswick. Litoral form, up to 30 m depth. (Vid. p. 40).

zebra (Makarov, 1935). Synonym: *Hetairus zebra* Makarov, 1935. Distribution: Bering Sea; Bering Island; Avacha Bay (eastcoast of Kamchatka). Litoral form, up to 32 m depth. (Vid. p. 40).

Birulia Brashnikov, 1903 (Vid. p. 42)

Synonym: *Paraspirontocaris* Yokoya, 1930.
Type: *Birulia sachalinensis* Brashnikov.

kishinouyei (Yokoya, 1930). Synonym: *Paraspirontocaris kishinouyei* Yokoya, 1930. Distribution: Japan (off Oshima Island, off Tairadate).

sachalinensis Brashnikov, 1903. Distribution: South- and southwestcoast of Sakhalin. 15-118 m depth.

Eualus Thallwitz, 1892 (Vid. p. 43)

Synonyms: *Helia* Thallwitz, 1892 (nomen praeocc.); *Spirontocarella* Brashnikov, 1907.
Type: *Eualus obses* Thallwitz.

avinus (Rathbun, 1899). Synonyms:*Spirontocaris avina* Rathbun, 1899; *Hippolyte avina* Williamson, 1915. Distribution: Westcoast of N. America from Pribilof Islands to Oregon. 74-630 m depth.

barbatus (Rathbun, 1899). Synonyms: *Spirontocaris barbata* Rathbun, 1899; *Hippolyte barbata* Williamson, 1915. Distribution: Westcoast of N. America from Pribilof Islands to Fuca Strait. 80-500 m depth.

biunguis (Rathbun, 1902 c). Synonyms: *Spirontocaris biunguis* Rathbun, 1902 c; *Hippolyte biunguis* Williamson, 1915. Distribution: Westcoast of N. America from Pribilof Islands to Oregon; Japan. 190-1800 m depth.

fabricii (Krøyer, 1841). Synonyms: *Hippolyte Fabricii* Krøyer, 1841; *Helia fabricii* Thallwitz, 1892; *Spirontocaris fabricii* Rathbun, 1904. Distribution: From the westcoast of Greenland to Massachusetts Bay; Arctic Canada; Arctic Alaska southward to Cook Inlet; Siberian eastcoast; Japanese Sea. 4-200 m depth.

gaimardii (H. Milne Edwards, 1837 b). Synonyms: *Hippolyte Gaimardii* H. Milne Edwards, 1837 b; *Hippolyte gibba* Krøyer, 1841; *Hippolyte lentiginosa* Rathke, 1843; *Hippolyte recurvirostris* Rathke, 1843; *Hippolyte Retzii* Rathke, 1843; *Hippolyte gracilis* Lilljeborg, 1850; *Hippolyte pandaliformis* Bell, 1851 [1]); *Hippolyte belcheri* Bell, 1855; *Eualus obses* Thallwitz, 1892; *Spirontocaris gaimardii* Rathbun, 1899; *Spirontocaris belcheri* Rathbun, 1899; *Spirontocaris gaimardii* var. *belcheri* Rathbun, 1904; *Eualus gaimardi belcheri* Birula, 1910; *Spirontocaris recurvirostris* Molander, 1914; *Spirontocaris gaimardii* f. *gibba* Dons, 1915; *Spirontocaris gaimardii* f. *typica* Dons, 1915; *Eualus gaimardii* f. *gibba* Alpatov, 1923. Distribution:

1) The name *Hippolyte pandaliformis* Bell is used already as early as 1849 by W. Thompson (Ann. Mag. nat. Hist., ser. 2 vol. 3, p. 353) for the present species; the first description, however, is that of Bell, 1851.

Circumpolar, southward to North Sea (Kiel and Yarmouth), Cape Cod (eastcoast of America), Sitka (westcoast of America), Siberia. 10-900 m depth. (Vid. p. 43).

gracilirostris (Stimpson, 1860). Synonyms: *Hippolyte gracilirostris* Stimpson, 1860; *Spirontocaris gracilirostris* Balss, 1914 a. Distribution: Japan (Hakodate, Todokokke, Sagami Bay and near Oga). 145-150 m depth.

herdmani (Walker, 1898 b). Synonyms: *Spirontocaris herdmani* Walker, 1898 b; *Heptacarpus herdmani* Holmes, 1900; *Hippolyte herdmani* Williamson, 1915. Distribution: Westcoast of N. America from Sitka to Puget Sound. 18 m depth.

leptognathus (Stimpson, 1860). Synonyms: *Hippolyte leptognatha* Stimpson, 1860; *Spirontocaris japonica* Yokoya, 1930; *Spirontocaris leptognatha* Yokoya, 1933. Distribution: Japanese and Chinese waters from Yezo to Shantung. 9-644 m depth. (Vid. p. 43).

macilentus (Krøyer, 1841). Synonyms: *Hippolyte macilenta* Krøyer, 1841; *Spirontocaris macilenta* Rathbun, 1904; *Spirontocarella macilenta* Brashnikov, 1907. Distribution: From West Greenland to Nova Scotia; Bering and Okhotsk Seas. 150-540 m depth.

macrophthalmus (Rathbun, 1902 c). Synonyms: *Spirontocaris macrophthalma* Rathbun, 1902 c; *Hippolyte macrophthalma* Williamson, 1915. Distribution: Westcoast of America from Unalaska to Point Sur (California). 320-1140 m depth.

makrognathus (Stebbing, 1921). Synonym: *Spirontocaris makrognathus* Stebbing, 1921. Distribution: Durban.

middendorffi Brashnikov, 1907. Synonym: *Spirontocaris middendorffii* Balss, 1914 a. Distribution: Sea of Okhotsk; Castries Bay. Superficial form, up to 100 m depth.

occultus (Lebour, 1936). Synonyms: ? *Palemon Microramphos* Risso, 1816; ? *Hippolyte Crassicornis* H. Milne Edwards, 1837 b; ?*Hippolyte Lovenii* Rathke, 1843; ? *Vianellia dorsiocullata* Nardo, 1847; ? *Cancer dorsiocullata* (Chiereghin MSS) Nardo, 1847; ? *Hippolyte Yarrellii* Thompson, 1853; *Spirontocaris occulta* Lebour, 1936. Distribution: From the English southcoast southwards into the Mediterranean.

pax (Stebbing, 1915). Synonym: *Spirontocaris pax* Stebbing, 1915. Distribution: Cape of Good Hope region. 36-72 m depth.

pusiolus (Krøyer, 1841). Synonyms: *Hippolyte pusiola* Krøyer, 1841; *Hippolyte vittata* Rathke, 1843; *Hippolyte subula* Rathke, 1843; *Hippolyte Barleei* Bate, 1852; *Hippolyte Andrewsii* Kinahan, 1857: *Hippolyte Korenii* Danielssen, 1859; *Spirontocaris pusiola* Norman, 1894. Distribution: Murman coast southward to the Channel Islands; Catalonian coast of Spain; Iceland; from St. Lawrence Bay to Cape Cod (eastcoast of N. America); Alaska Peninsula; Aleutian Islands; Bering Island. Depth up to 500 m.

stoneyi (Rathbun, 1902 c). Synonyms: *Spirontocaris stoneyi* Rathbun, 1902 c; *Hippolyte staneyi* Williamson, 1915. Distribution: Labrador; Bering Sea. 36 m depth.

suckleyi (Stimpson, 1864). Synonyms: *Hippolyte suckleyi* Stimpson, 1864; *Heptacarpus ? suckleyi* Holmes, 1900; *Spirontocaris suckleyi* Rathbun, 1904. Distribution: Arctic Alaska to Washington. 36-108 m depth.

townsendi (Rathbun, 1902 c). Synonyms: *Spirontocaris townsendi* Rathbun, 1902 c; *Hippolyte townsendi* Williamson, 1915. Distribution: Westcoast of N. America from Pribilof Islands to Puget Sound; Siberian eastcoast. 38-430 m depth.

Heptacarpus Holmes, 1900

Type: *Hippolyte palpator* Owen.

brachydactylus (Rathbun, 1902 c). Synonym: *Spirontocaris brachydactyla* Rathbun, 1902 c. Distribution: South California. 480-750 m depth.

brevirostris (Dana, 1852 a). Synonyms: *Hippolyte brevirostris* Dana, 1852 a; *Spirontocaris brevirostris* Walker, 1898 a. Distribution: Aleutian Islands to San Francisco Bay (California). Depth: surface up to 45 m.

camtschaticus (Stimpson, 1860). Synonyms: *Hippolyte camtschatica* Stimpson, 1860; *Spirontocaris camtschatica* Rathbun, 1904. Distribution: Westcoast of N. America from arctic Alaska to Port Etches; Bering Sea; Kamchatka; Japan. 5-100 m depth.

carinatus Holmes, 1900. Synonym: *Spirontocaris carinata* Rathbun, 1904. Distribution: California from Monterey Bay to Point Loma. 0-27 m depth.

decorus (Rathbun, 1902 c). Synonyms: *Spirontocaris decora* Rathbun, 1902 c; *Hippolyte decora* Williamson, 1915. Distribution: Westcoast of North America from Fuca Strait to San Diego (California). 90-300 m depth.

flexus (Rathbun, 1902 c). Synonyms: *Spirontocaris flexa* Rathbun, 1902 c; *Hippolyte flexa* Williamson, 1915. Distribution: Bering Sea to Drake's Bay (California). 36-167 m depth.

franciscanus (Schmitt, 1921). Synonym: *Spirontocaris franciscana* Schmitt, 1921. Distribution: California (San Francisco Bay and Laguna Beach). 4-135 m depth.

geniculatus (Stimpson, 1860). Synonyms: *Hippolyte geniculata* Stimpson, 1860; *Spirontocaris geniculata* Rathbun, 1902 b; *Spirontocaris alcimede* De Man, 1906; *Eualus geniculata* Derjugin & Kobjakova, 1935. Distribution: Japanese and Chinese waters from Hakodate to the Yellow Sea. 9-145 m depth. (Vid. p. 44).

grebnitzkii (Rathbun, 1902 b). Synonyms: *Spirontocaris grebnitzkii* Rathbun, 1902 b; *Eualus grebnitzkii* Derjugin & Kobjakova, 1935. Distribution: Japanese Sea.

jordani (Rathbun, 1902 b). Synonyms: *Spirontocaris jordani* Rathbun, 1902 b. Distribution: Japan (Hakodate and Sagami Bay). 20 m depth.

kincaidi (Rathbun, 1902 c). Synonym: *Spirontocaris kincaidi* Rathbun, 1902 c; *Hippolyte kinkaidi* Williamson, 1915. Distribution: Westcoast of N. America from Puget Sound to San Pedro (California). 38-180 m depth.

maxillipes (Rathbun, 1902 c). Synonyms: *Spirontocaris maxillipes* Rathbun, 1902 c; *Hippolyte maxillipes* Williamson, 1915. Distribution: Aleutian Islands. Depth: 480-1125 m.

minutus (Yokoya, 1930). Synonym: *Spirontocaris minuta* Yokoya, 1930. Distribution: Japan (Mutsu Bay, N.E. Honshu, and Inland Sea). 34-669 m depth.

moseri (Rathbun, 1902 c). Synonym: *Spirontocaris moseri* Rathbun, 1902 c; *Hippolyte maseri* Williamson, 1915. Distribution: Westcoast of N. America from Bering Sea to Washington. 108-930 m depth.

palpator (Owen, 1839). Synonyms: *Hippolyte palpator* Owen, 1839; *Hippolyte hemphilli* Lockington, 1877; *Spirontocaris palpator* Rathbun, 1904. Distribution: California from San Francisco Bay to Magdalena Bay. 9-12 m depth.

paludicola (Holmes, 1900). Synonym: *Spirontocaris paludicola* Rathbun, 1904. Distribution: British Columbia to San Diego (California). 3.5-10 m depth.

pandaloides (Stimpson, 1860). Synonyms: *Hippolyte pandaloides* Stimpson, 1860; *Spirontocaris pandaloides* De Man, 1907. Distribution: Japanese and Chinese waters (Hakodate to Kiaochow Bay); India (mouth of Indus). 9-30 m depth. (Vid. p. 44).

pictus (Stimpson, 1874). Synonyms: *Hippolyte picta* Stimpson, 1874; *Spirontocaris picta* Rathbun, 1904. Distribution: California from Monterey Bay to San Diego. Litoral form (in tidepools).

propugnatrix (De Man, 1906). Synonym: *Spirontocaris propugnatrix* De Man, 1906. Distribution: Inland Sea of Japan. 11 m depth.

rectirostris (Stimpson, 1860). Synonyms: *Hippolyte rectirostris* Stimpson, 1860; *Spirontocaris rectirostris* De Man, 1906; *Eualus rectirostris* Derjugin & Kobjakova, 1935. Distribution: Japanese and Chinese waters from Hakodate to Korea and the Yellow Sea.

sitchensis (Brandt, 1851). Synonyms: *Hippolyte sitchensis* Brandt, 1851; *Spirontocaris sitchensis* Rathbun, 1904. Distribution: Westcoast of N. America from Sitka (Alaska) to Puget Sound.

stimpsoni nom. nov. Synonyms: *Hippolyte cristata* Stimpson, 1860 (non De Haan, 1841 pro *Sicyonia cristata*); *Spirontocaris cristata* Walker, 1898 a; *Heptacarpus cristatus* Holmes, 1900. Distribution: Westcoast of N. America from Sitka (Alaska) to San Diego (California). 5-55 m depth. (Vid. p. 44).

stylus (Stimpson, 1864). Synonyms: *Hippolyte stylus* Stimpson, 1864; *Hippolyte esquimaltiana* Bate, 1864; *Spirontocaris stylus* Rathbun, 1904. Distribution: Westcoast of N. America from Barclay Sound (British Columbia) to Puget Sound.

taylori (Stimpson, 1857). Synonyms: *Hippolyte taylori* Stimpson, 1857; *Spirontocaris taylori* Rathbun, 1904. Distribution: California from San Francisco Bay to Magdalena Bay. 3.5-13 m depth.

tenuissimus Holmes, 1900. Synonyms: *Hippolyte gracilis* Stimpson, 1864 (non Lilljeborg, 1850 pro *Eualus gaimardii*); *Spirontocaris gracilis* Rathbun, 1904. Distribution: Westcoast of N. America from the Shumagin Islands (Alaska) to Santa Catalina Island (California). 38-85 m depth. (Vid. p. 43).

tridens (Rathbun, 1902 c). Synonyms: *Spirontocaris tridens* Rathbun, 1902 c; *Hippolyte tridens* Williamson, 1915. Distribution: Westcoast of North America from the Aleutian Islands to Washington. 34-86 m depth.

Chorismus Bate, 1888

Type: *Chorismus tuberculatus* Bate.

antarcticus (Pfeffer, 1887). Synonyms: *Hippolyte antarctica* Pfeffer, 1887; *Hippolyte Romanchei* A. Milne Edwards, 1891. Distribution: Antarctic circumpolar (South Georgia, Wilhelm II Land, Ross Sea, King George V Land and Magellan Strait). 15-900 m depth. (Vid. p. 45).

tuberculatus Bate, 1888. Distribution: Off Marion Island (Southern Indian Ocean). 560 m depth.

Cryptocheles G. O. Sars, 1869

Type: *Cryptocheles pygmaea* G. O. Sars.

pygmaea G. O. Sars, 1869. Synonym: *Cryptocheles abyssicola* M. Sars, 1868 (nom. nud.). Distribution: Westcoast of Norway from the Lofoten Islands to the Skagerrak. 200-660 m depth.

Thoralus nov. gen. (Vid. p. 45)

Synonym: ? *Vianellia* Nardo, 1847.
Type: *Hippolyte Cranchii* Leach.

cranchii (Leach, 1817). Synonyms: ? *Palemon Microramphos* Risso, 1816; *Hippolyte Cranchii* Leach, 1817; ? *Hippolyte Crassicornis* H. Milne Edwards, 1837 b; *Astacus Cranchii* Moore, 1838: *Hippolyte mutila* Krøyer, 1841; ? *Hippolyte Lovenii* Rathke, 1843; ?*Vianellia dorsiocullata* Nardo, 1847; ? *Cancer dorsiocullatus* (Chiereghin MSS) Nardo, 1847; ? *Hippolyte Yarrellii* Thompson, 1853; *Hippolyte Bunseni* Neumann, 1878; *Spirontocaris cranchii* Walker, 1898a; *Spirontocharis Bunseni* Galdiano, 1920; *Thor Bunseni* Zariquiey Cenarro, 1935b. Distribution: Westcoast of Norway southward into the Mediterranean. 6-130 m depth. (Vid. p. 46).

sollaudi (Zariquiey Cenarro, 1935 b). Synonym: *Thor sollaudi* Zariquiey Cenarro, 1935 b. Distribution: Catalonian coast of Spain. 1-40 m depth. (Vid. p. 47).

Thor Kingsley, 1878 b

Synonym: *Paschocaris* Nobili, 1905.
Type: *Thor floridanus* Kingsley.

amboinensis (De Man, 1888 a). Synonyms: *Hippolyte amboinensis* De Man, 1888 a; *Thor discosomatis* Kemp, 1916. Distribution: Andaman Islands, Nicobar Islands, Malay Archipelago. Litoral species. (Vid. p. 50).

floridanus Kingsley, 1878b. Distribution: Bermuda and N. Carolina southwards to the Gulf of Mexico; Old Providence Island (Colombia); Curaçao; Aruba. Litoral species. (Vid. p. 49).

intermedius nov. spec. Distribution: Sissie (Moluccas). Litoral form. (Vid. p. 51).

maldivensis Borradaile, 1915. Synonym: *Thor spinosus* Boone, 1935. Distribution: Western Indian Ocean; Andaman Islands; Malay Archipelago; Hawaiian Archipelago. (Vid. p. 48).

paschalis (Heller, 1862 a). Synonyms: *Hippolyte paschalis* Heller, 1862 a; *Paschocaris paschalis* Nobili, 1905c. Distribution: Red Sea; Zanzibar; Andaman Islands; Singapore; Sulu Archipelago; Ternate. Litoral form. (Vid. p. 49).

Hippolyte Leach, 1814

Synonym: *Virbius* Stimpson, 1860.
Type: *Hippolyte varians* Leach.

acuta (Stimpson, 1860). Synonym: *Virbius acutus* Stimpson, 1860. Distribution: Ryukyu Archipelago; Hawaiian Archipelago.

bifidirostris (Miers, 1876). Synonym: *Virbius bifidirostris* Miers, 1876a. Distribution: ? Great Barrier Reef; New Zealand. (Vid. p. 58).

californiensis Holmes, 1895. Distribution: Westcoast of N. America from Sitka to Lower California. 18 m depth.

capensis (Lenz & Strunck, 1914). Synonym: *Virbius capensis* Lenz & Strunck, 1914. Distribution: Simon's Bay (Cape of Good Hope). Litoral species. Perhaps identical with *H. kraussiana* (Stimps.).

caradina nom. nov. Synonyms: *Caradina tenuirostris* Bate, 1863; *Virbius tenuirostris* Ortmann, 1894b;

Hippolyte tenuirostris Hale, 1927b (non H. Milne Edwards, 1837). Distribution: St. Vincent Gulf (S. Australia); Botany Bay (New S. Wales). Litoral form, 5 m depth. (Vid. p. 54).

coerulescens (Fabricius, 1775). Synonyms: *Astacus coerulescens* Fabricius, 1775; *Cancer coerulescens* Gmelin, 1789; *Palaemon pelasgicus* Bosc, 1801; *Palaemon pelagicus* Latreille, 1802; *Hippolyte tenuirostris* H. Milne Edwards, 1837b; *Hippolyte acuminatus* Dana, 1852a; *Virbius acuminatus* Stimpson, 1860; *Hippolyte bidentatus* Bate, 1888. Distribution: Central Atlantic Ocean; Bermudas; Gulfstream from N. Carolina to Florida; Azores; Canary Islands; Cape Verde Islands; Gulf of Guinea; Port Alexander (S. Angola). Mostly between floating weeds (*Sargassum*). (Vid. p. 53).

commensalis Kemp, 1925. Distribution: Andaman Islands; Nicobar Islands.

curaçaoensis Schmitt, 1924a. Distribution: Bonaire, Curaçao. Superficial form.

exilirostrata Dana, 1852a. Distribution: Rio de Janeiro, Brazil.

inermis Leach, 1815. Synonyms: *Palemon Olivieri* Risso, 1816; ? *Palemon Margaritaceus* Risso, 1816; *Hippolyte Prideauxiana* Leach, 1817; *Hippolyte Moorii* Leach, 1817; *Alpheus Olivieri* Risso, 1826; ? *Alpheus margaritaceus* Risso, 1826; *Alpheus viridis* Otto, 1828; *Pelias Olivieri* Roux, 1831; *Hippolytus Brullei* Guérin, 1832; *Hippolyte virescens* H. Milne Edwards, 1837a; *Hippolyte viridis* H. Milne Edwards, 1837 b; *Hippolyte mauritanicus* Lucas, 1849; *Hippolyte Grayana* Thompson, 1853; *Hippolyte Mitchelli* Thompson, 1853; *Hippolyte Whitei* (with var. *ensis* and *falcatus*) Thompson, 1853; *Virbius viridis* Heller, 1863; *Bellidia Huntii* Gosse, 1877; *Virbius Brullei* (with formae *elongata* and *fortior*) Czerniavsky, 1884; *Hippolyte gracilis* var. *viridis* Chichkoff, 1912. Distribution: From the south- and westcoast of Great Britain and Ireland southward into the Mediterranean and the Black Sea. Up to 54 m depth. (Vid. p. 54).

kraussiana (Stimpson, 1860). Synonym: *Virbius kraussianus* Stimpson, 1860. Distribution: Cape of Good Hope region (from Simon's Bay to East London). Litoral form. Perhaps *H. capensis* is identical with the present species.

leptocerus (Heller, 1863). Synonym: *Virbius leptocerus* Heller, 1863. Distribution: Western Mediterranean. Litoral species. The specimen recorded by WALKER & SCOTT (1903) from Abd-el-Kuri probably does not belong to the present species.

longirostris nom. nov. Synonyms: ? *Cancer Astacus gibbosus* Montagu, 1808; *Virbius gracilis* Heller, 1862 b; *Virbius gracilis* var. *longirostris* and var. *brevirostris* Czerniavsky, 1868; *Hippolyte gracilis* Stossich (non Lilljeborg, 1850); *Virbius gracilis* forma *typica* and var. *articulirostris* Czerniavsky, 1884. Distribution: From the southcoast of England southward into the Mediterranean and the Black Sea. Litoral form. (Vid. p. 54).

martiali A. Milne Edwards, 1891. Distribution: Cape Horn region (Beagle Canal; off Lupataya). 8-9 m depth.

mexicana Chace, 1937. Distribution: Santa Inez Bay, Lower California. 2 m depth.

obliquimana Dana, 1852a. Synonym: *Virbius gracilis* var. *brasiliensis* Czerniavsky, 1884. Distribution: Rio de Janeiro.

pleuracantha (Stimpson, 1874). Synonym: *Virbius pleuracanthus* Stimpson, 1874. Distribution: Bermudas; New Jersey to N. Carolina. Litoral form.

pleuracantha var. *bermudensis* Gurney, 1936. Distribution: Bermudas. Litoral form.

proteus (Paulson, 1875). Synonym: *Virbius proteus* Paulson, 1875. Distribution: Red Sea. Litoral form.

varians Leach, 1814. Synonyms: *Alpheus elongatus* Risso, 1826; *Hippolyte smaragdina* Krøyer, 1841; *Virbius varians* Heller, 1863; *Hippolyte fascigera* Gosse, 1853; *Hippolyte producta* Norman, 1861; *Caradina tenuis* Bate, 1866b; *Caradina varians* Bate, 1866b; *Virbius fasciger* Sars, 1871; *Virbius productus* Henderson, 1887. Distribution: From the westcoast of Norway and the Faeroes southward into the Mediterranean. 0-240 m depth.

ventricosa H. Milne Edwards, 1837. Synonyms: *Virbius australiensis* Stimpson, 1860; *Hippolyte orientalis* Heller, 1862a; *Caradina cincinnuli* Bate, 1863; *Virbius Mossambicus* Hilgendorf, 1878; *Virbius orientalis* Lenz, 1912; *Hippolyte australiensis* Kemp, 1914. Distribution: Red Sea to Malay Archipelago and Australia. Lives near the surface. (Vid. p. 55).

williamsi Schmitt, 1924b. Distribution: Galapagos Islands. In rockpools.

zostericola (Smith, 1873). Synonym: *Virbius zostericola* Smith, 1873. Distribution: Eastcoast of America from S. Massachusetts to Curaçao. Litoral form.

Trachycaris Calman, 1906

Type: *Platybema rugosus* Bate.

rugosus (Bate, 1888). Synonym: *Platybema rugosus* Bate, 1888. Distribution: Eastcoast of America from Florida to Yucatan and from Porto Rico to St. Thomas. 25-700 m depth.

Phycocaris Kemp, 1916

Type: *Phycocaris simulans* Kemp.

simulans Kemp, 1916. Distribution: Andaman Islands. Litoral form.

Latreutes Stimpson, 1860

Synonyms: *Cyclorhynchus* De Haan, 1849 (nomen praeocc.); *Rhynchocyclus* Stimpson, 1860 (nomen praeocc.); *Caradina* Bate, 1863; *Concordia* Kingsley, 1880; *Platybema* Bate, 1888. Type: *Hippolyte ensiferus* H. Milne Edwards.

acicularis Ortmann, 1890. Distribution: Japan (Hakodate, Yokohama, Kadsiyama and the Inland Sea).

anoplonyx Kemp, 1914. Distribution: Bombay; Burma coast; Java. Superficial form. (Vid. p. 60).

compressus (Stimpson, 1860). Synonyms: *Rhynchocyclus compressus* Stimpson, 1860; *Caradina truncifrons* Bate, 1863; *Latreutes truncifrons* Ortmann, 1894b. Distribution: St. Vincent Gulf (South Australia); Port Hacking and Port Jackson (New South Wales). Litoral species. (Vid. p. 59).

dorsalis Stimpson, 1860. Distribution: Hakodate, Yezo, Japan and Onagawa, N. E. Honshu, Japan. 8-14 m depth.

foliirostris Kobjakova, 1935. Distribution: Gulf of Peter the Great (eastcoast of Siberia).

fucorum (Fabricius, 1798). Synonyms: *Palaemon fucorum* Fabricius, 1798; *Hippolyte ensiferus* H. Milne Edwards, 1837b; *Latreutes ensiferus* Stimpson, 1860. Distribution: Northern Atlantic Ocean: Eastcoast of America from Martha's Vineyard to Porto Rico; Azores; Cape Verde Islands. Lives among floating seaweed (Sargassum).

laminirostris Ortmann, 1890. Distribution: Japanese and Chinese waters from Mutsu Bay to the Yellow Sea. 9 m depth.

mucronatus (Stimpson, 1860). Synonyms: *Rhynchocyclus mucronatus* Stimpson, 1860; *Platybema mucronatus* Bate, 1888; *Latreutes Gravieri* Nobili, 1904; *Latreutes mucronatus multidens* Nobili, 1905 c. Distribution: Red Sea to Japan, Malay Archipelago and N. Australia. Litoral form.

natalensis Lenz & Strunck, 1914. Distribution: Natal. Litoral form.

parvulus (Stimpson, 1866). Synonyms: *Rhynchocyclus parvulus* Stimpson, 1866; *Concordia gibberosa* Kingsley, 1880; *Latreutes gibberosus* Schmitt, 1935. Distribution: Eastcoast of N. America from N. Carolina to Florida; Texas; Bahia Honda, Cuba; Porto Rico. 0-7 m depth. (Vid. p. 59).

phycologus Nobili, 1905 b. Distribution: Arabian Sea. Living between floating weeds.

planirostris (De Haan, 1841). Synonyms: *Hippolyte planirostris* De Haan, 1841; *Lysmata planirostris* De Haan, 1841-49; *Cyclorhynchus planirostris* De Haan, 1849; *Rhynchocyclus planirostris* Miers, 1879; *Platybema planirostris* Bate, 1888. Distribution: Kurile Islands; Japan (Hakodate to Nagasaki); Cape Jaubert (N. W. Australia). 5-110 m depth.

planus Bate, 1888. Distribution: Off Sibuko, Zamboanga (Philippines).

porcinus Kemp, 1916. Distribution: Andaman Islands. Litoral form.

pristis (Nobili, 1900). Synonym: *Platybema pristis* Nobili, 1900. Distribution: Beagle Bay (Papua).

pygmaeus Nobili, 1904. Distribution: Red Sea; Arabian southcoast; Indian southcoast; Andamans; Cape Jaubert (N. W. Australia). Litoral form, up to 26 m depth.

unidentatus Bate, 1888. Distribution: Off Sibuko, Zamboanga (Philippines).

Paralatreutes Kemp, 1925

Type: *Paralatreutes bicornis* Kemp.

bicornis Kemp, 1925. Distribution: Andaman Islands. 5-7 m depth.

Angasia Bate, 1863

Synonym: *Tozeuma* Stimpson, 1860 (Nomen praeocc.).

Type: *Angasia pavonina* Bate.

armata (Paulson, 1875). Synonyms: *Tozeuma armatum* Paulson, 1875; *Angasia Stimpsonii* Henderson, 1893. Distribution: Red Sea to Japan and Malay Archipelago. 0-150 m depth. (Vid. p. 61).

carolinensis (Kingsley, 1878 b). Synonym: *Tozeuma carolinense* Kingsley, 1878 b. Distribution: Eastcoast of America from Vineyard Sound to Yucatan and Curaçao. 0-75 m depth.

cornuta (A. Milne Edwards, 1881). Synonym: *Tozeuma cornutum* A. Milne Edwards, 1881. Distribution: Barbados. 65 m depth. According to BALSS (1924 b) this only is a juvenile stage of *A. carolinensis* (Kingsley).

elongata Baker, 1904. Synonym: *Tozeuma elongatum* Hale, 1927 b. Distribution: South Australia. 27 m depth.

erythraea (Nobili, 1904). Synonym: *Tozeuma erythraeum* Nobili, 1904. Distribution: Red Sea.

kimberi Baker, 1904. Synonym: *Tozeuma kimberi* Hale, 1927 b. Distribution: St. Vincent Gulf (S. Australia). 7 m depth.

lanceolata (Stimpson, 1860). Synonym: *Tozeuma lanceolatum* Stimpson, 1860. Distribution: Hongkong.

novae-zealandiae (Borradaile, 1916). Synonym: *Tozeuma novae-zealandiae* Borradaile, 1916. Distribution: New Zealand (off North Cape); Auckland Islands. 81-128 m depth.

pavonina Bate, 1863. Synonyms: *Angasia robusta* Baker, 1904; *Tozeuma pavoninum* Kemp, 1914; *Tozeuma robustum* Kemp, 1914. Distribution: St. Vincent Gulf (S. Australia). 18-22 m depth.

tomentosa Baker, 1904. Synonym: *Tozeuma tomentosum* Hale, 1927 b. Distribution: S. Australia. 36 m depth.

Gelastocaris Kemp, 1914

Type: *Gelastocaris paronae* (Nobili).

paronae (Nobili, 1905 a). Synonym: *Latreutes Paronae* Nobili, 1905 a. Distribution: Zanzibar; Ceylon; Andaman Islands; Malay Archipelago; N. W. Australia. 0-26 m depth. (Vid. p. 63).

Bythocaris G. O. Sars, 1869

Type: *Bythocaris simplicirostris* G. O. Sars

gracilis Smith, 1885. Distribution: North Atlantic (off S. W. Ireland, off W. Greenland and eastcoast of N. America between 35° 45′ N and 39° 35′ N). 700-1900 m depth.

leucopis G. O. Sars, 1879. Distribution: The arctic basin between Spitsbergen, Norway, the Faeroes, Iceland and Greenland; Baffin Bay; Davis Strait. 670-2857 m depth.

nana Smith, 1885. Distribution: Eastcoast of N. America (Martha's Vineyard, Chesapeake Bay). 117-256 m depth.

payeri (Heller, 1875). Synonym: *Hippolyte Payeri* Heller, 1875. Distribution: Off W. Greenland; N. Atlantic Ocean from the line Shetland Islands—the Faeroes—Iceland—Greenland northward to Spitsbergen and Franz Joseph Land; Barents Sea; Kara Sea. 180-1000 m depth.

simplicirostris G. O. Sars, 1869. Synonyms: *Hippolyte Panschii* Buchholz, 1874; *Bythocaris panschii* Doflein, 1900. Distribution: From the northern Atlantic Ocean from East Greenland and Spitsbergen southward to the northern North Sea; off the Murman Coast. 54-600 m depth.

Mimocaris Nobili, 1903

Type: *Mimocaris heterocarpoides* Nobili.

heterocarpoides Nobili, 1903. Distribution: N. W. Borneo; E. Sumatra. (Vid. p. 64).

Lysmata Risso, 1826

Synonym: Melicerta Risso, 1816 (nomen praeocc.); *Miersia* Chun, 1888 (non Kingsley, 1880); *Myersia* Lo Bianco, 1901.

Type: *Melicerta Seti Caudata* Risso.

acicula (Rathbun, 1906). Synonym: *Hippolysmata acicula* Rathbun, 1906. Distribution: Hawaiian Islands (Kauai and Honolulu). 14-266 m depth. (Vid. p. 65).

dentata (De Haan, 1841). Synonyms: *Palaemon dentatus* De Haan, 1841; *Lysmata seticaudata* var. *ternatensis* De Man, 1902; *Lysmata affinis* Borradaile, 1915. Distribution: Western Indian Ocean; Christmas Island; Malay Archipelago; Japan. Litoral species. (Vid. p. 64).

galapagensis Schmitt, 1924 b. Distribution: Galapagos Islands. 0-13 m depth.

intermedia (Kingsley, 1878 b). Synonym: *Hippolysmata intermedia* Kingsley, 1878 b. Distribution: Florida Keys to Curaçao; Azores. 0-22.5 m depth.

moorei (Rathbun, 1902 a). Synonym: *Hippolysmata moorei* Rathbun, 1902 a. Distribution: Porto Rico; Old Providence Island (Columbia); Bonaire; French Congo. Litoral species.

paucidens (Rathbun, 1906). Synonym: *Hippolysmata paucidens* Rathbun, 1906. Distribution: Hawaiian Islands; Clipperton Island. Litoral species. (Vid. p. 67).

seticaudata (Risso, 1816). Synonyms: *Melicerta Seti Caudata* Risso, 1816; *Lysmata aberrans* Czerniavsky, 1884; *Miersia clavigera* Chun, 1888; *Myersia clavigera* Lo Bianco, 1901; *Merhippolyte clavigera* Thiele, 1905. Distribution: Channel Islands to Portugal; Mediterranean; Black Sea. Litoral form.

trisetacea (Heller, 1861). Synonyms: *Hippolyte trisetacea* Heller, 1861; *Lysmata pusilla* Heller, 1862 a; *Lysmata chiltoni* Kemp, 1914. Distribution: Red Sea; Western Indian Ocean; Malay Archipelago; Micronesia; Kermadec Islands (near New Zealand). Litoral form (Vid. p. 65).

zacae Armstrong, 1941. Distribution: Samoa.

Hippolysmata Stimpson, 1860

Type: *Hippolysmata vittata* Stimpson.

amboinensis De Man, 1888 a. Synonym: *Hippolysmata vittata* var. *amboinensis* De Man, 1888 a. Distribution: Amboina. (Vid. p. 70).

californica Stimpson, 1866. Synonym: *Hippolyte lineata* Lockington, 1877. Distribution: California (Santa Barbara to San Diego). Litoral form (from tidepools).

dentata Kemp, 1914. Distribution: Bay of Bengal (Orissa coast, off mouth of Irawaddi). 36 m depth.

durbanensis Stebbing, 1921. Distribution: Durban Bay. Litoral form.

ensirostris Kemp, 1914. Synonym: *Exhippolysmata ensirostris* Balss, 1933. Distribution: Coasts of India from Bombay to Orissa; Burma; eastcoast of Sumatra; Bay of Batavia. Litoral form. (Vid. p. 74).

ensirostris var. *punctata* Kemp, 1914. Distribution: Ganges delta; Burma; E. Sumatra. Litoral form.

grabhami Gordon, 1935. Distribution: Funchal (Madeira).

hastatoides (Balss, 1914 b). Synonyms: *Mimocaris hastatoides* Balss, 1914 b; *Exhippolysmata hastatoides* De Man, 1925. Distribution: African westcoast from Cameroon to Angola.

kükenthali (De Man, 1902). Synonyms: *Hippolyte kükenthali* De Man, 1902; *Hippolysmata marleyi* Stebbing, 1919. Distribution: Eastcoast of South Africa; Seychelles; Ceylon; Malay Archipelago. Litoral form. (Vid. p. 69).

multiscissa Nobili, 1905 c. Distribution: Red Sea.

porteri Rathbun, 1907. Distribution: Coast of Chile.

prima (Borradaile, 1915). Synonym: *Lysmatella prima* Borradaile, 1915. Distribution: Maldive Islands; Andaman Islands; Malay Archipelago. Litoral form. (Vid. p. 72).

rhizophorae Rathbun, 1900. Distribution: Rio Parahyba do Norte (Brasil). On mangroves.

tugelae (Stebbing, 1915). Synonym: *Exhippolysmata tugelae* Stebbing, 1915. Distribution: Off Natal. 22-47 m depth.

vittata Stimpson, 1860. Synonyms: *Nauticaris unirecedens* Bate, 1888; *Hippolysmata vittata* var. *subtilis* Thallwitz, 1892. Distribution: Red Sea; Persian Gulf; Indian coasts from Karachi to Penang; Japan; China; Malay Archipelago. Litoral form. (Vid. p. 67).

wurdemanni (Gibbes, 1850 a). Synonym: *Hippolyte wurdemanni* Gibbes, 1850 a. Distribution: N. Carolina; Florida; Manguape (N. E. Brasil). Litoral form.

Merguia Kemp, 1914

Type: *Hippolyte oligodon* De Man.

oligodon (De Man, 1888 b). Synonym: *Hippolyte oligodon* De Man, 1888 b. Distribution: Mergui Archipelago; Malay Archipelago. Litoral form. (Vid. p. 75).

Species incertae:

Astacus histrio Fabricius, 1775 (= *Cancer Histrio* Gmelin, 1789) from Greenland. This species is described by Fabricius as follows: "Statura et magnitudo A. Crangonis. Palpi apice spinosi. Rostrum porrectum, subtus in medio dilatatum, unidentatum, supra serratum. Thorax cylindricus, margine antico tridentato. Corpus rufo cinereoque variegatum. Cauda foliolis quinque, intermedio lineis duabus spinosis." In the definition moreover is stated "antennis posticis bifidis". The description of the rostrum fits rather well for *Spirontocaris spinus* and for *S. lilljeborgii,* which species both occur at the Greenland coast. The description of Fabricius is too short, however, to identify his *Astacus histrio* with certainty. Fabricius gives in his Systema Entomologiae (1775) as well as in his Species Insectorum (1781) *Cancer pennaceus* of Linné as a doubtful synonym of the present species, afterwards, in his Mantissa (1787) and in his Entomologia Systematica (1793), he considers Linné's species to be identical with *Astacus locusta* Fabr.; *Cancer pennaceus,* however, is a Peneid prawn and is different from *A. histrio* as well as from *A. locusta,* which both belong to the Caridea.

Astacus varius Fabricius, 1781 (= *Cancer varius* Gmelin, 1789) from Valderhaug (Norway). This species probably is identical with *Lebbeus polaris.* (Vid. p. 39).

Cancer Astacus gibbosus Montagu, 1808, from Torcross (S. England). This species distinctly is a Hippolytid prawn as is shown by Montagu's description and figure. Montagu takes the third maxilliped to be the first leg. The second pereiopods are considered by Montagu to be "very long and slender appendages, that do not strictly appear to be legs, but seem to be auxiliary to the palpi, though they originate so far from the mouth, for they are always placed forward towards the mouth; these are chelate". The presence of supraorbital spines ("a small spine on each side the base of the proboscis") makes it clear that the species is a *Hippolyte,* as no other Hippolytid genera provided with supraorbital spines are known from the English southcoast. Three species of *Hippolyte* are known from that region, namely *H. varians, H. inermis* (= *prideauxiana*) and *H. longirostris* (= *H. gracilis*). The shape of the rostrum as figured by Montagu differs from all three species of *Hippolyte,* but by the presence of more than two dorsal teeth shows most resemblance to *H. longirostris.* Leach (1817) in the text of pl. 38 makes the following remark: "Montagu sent to me Hippolyte varians ..... as his *Cancer astacus gibbosus,* (Trans. Linn. Soc. ix. 91, t. 5, f. 4) but he afterwards informed

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me, by letter, that his figure and description had been made from mutilated specimens, of what he had since ascertained to be a very distinct species". If Montagu's specimens were mutilated, it certainly must have been the rostrum which was damaged, as all the other parts of the body are quite normal in the figure. Though Montagu's specimens show large resemblance to *Hippolyte longirostris,* we can not identify them with certainty with that species, as:

a. the rostrum in Montagu's figure does not show the unarmed distal part of the upper margin, which is present in *H. longirostris;*
b. Montagu's description was based on mutilated specimens, so that the shape of the rostrum may be different in normal specimens.

Cancer Nautilor Herbst, 1796. This species, of which Herbst gave a description and a figure, undoubtedly belongs to the present family as is shown by the short first leg and by the divided carpus of the second leg. According to Herbst the carpus is five-jointed, but I think it probable that he overlooked the articulations between the first three joints, so that the carpus in reality is seven-jointed. The species shows most resemblance to *Eualus gaimardii,* but the description is too incomplete and the figure shows too little details, to make certain identification possible, the more as the locality in which *Cancer Nautilor* was collected is unknown.

Eualus ratmanovi Makarov, 1941 from N. E. Siberia. The description of this species is not at my disposal. As most Russian authors do not separate the genera *Eualus* and *Heptacarpus,* it is unknown to me, in which of these two genera it belongs.

Hippolyte affinis Owen, 1839 (= *Spirontocaris affinis* Rathbun, 1904) from Monterey, California. This species is considered by Rathbun (1904) to belong to the group of *Spirontocaris* with one supraorbital spine (the genus *Lebbeus* in our conception), but a close examination of Owen's figure shows below this supraorbital spine two minute ones. If therefore the figure is correct, then the species must belong to the genus *Spirontocaris* s.s.; the description is not sufficient for the exact determination of the real status of this species. Since Owen's record the species has no more been found.

Hippolyte amabilis Lenz, 1901 (= *Spirontocaris amabilis* Rathbun, 1904) from Bare Island, British Colombia [1]). This species either belongs to the genus *Eualus* or to *Heptacarpus,* but nothing is known of the presence or absence of an exopod on the third maxillipeds. It shows a close resemblance to *Heptacarpus gracilis,* with which species it may be identical. De Man (1907, p. 418) gives additional details of the typespecimen, but he also does not mention anything about exo- or epipods.

Hippolyte consobrinus A. Milne Edwards, 1891 from Orange Bay (Cape Horn region). The most characteristic feature of this species is the fact that the posterior tooth of the rostrum is movable, a character, which till now never has been recorded in a Hippolytid species, but which is fairly common among the Pandalidae. It is probable that the species belongs to the Pandalidae (it even shows much resemblance to *Plesionika spiniserrata* Bate from the same

1) According to a later statement of Lenz (vid. De Man, 1907, p. 454) his specimen was not collected at Bare Island (British Colombia) but at Bare Island (New Zealand); this statement, however, must be taken with considerable doubt, as all species recorded by Lenz from Bare Islands are typically northern forms (e.g., *Spirontocaris spinus, Sclerocrangon boreas*) and as in the results of other groups collected by Schauinsland, Bare Island always is given as lying in British Colombia (vid. for instance Lemmermann, Abh. naturw. Ver. Bremen, vol. 16, 1900, p. 313).

region) but no certainty can be obtained before the structure of the other parts of the body is known.

Hippolyte Crassicornis H. Milne Edwards, 1837 from St. Malo (Brittany). This species is identical either with *Thoralus cranchii* or with *Eualus occultus.* The description of H. Milne Edwards is, however, not sufficient to make the identity certain.

Hippolyte Dozei A. Milne Edwards, 1891 from Grevy Island (Cape Horn region). The position of this species is not certain as nothing is known about its oral parts and its branchial formula. It certainly does not belong to the genus *Hippolyte,* as the carpus of the second pereiopod consists of 5 joints.

Hippolyte Grayi Cunningham, 1870 from Port Otway (Cape Horn region). The description of this species is very inadequate and the figure is poor. It shows much resemblance to *Pandalus paucidens* Miers from the same region, with which species it probably is identical.

Hippolyte ignobilis Kinahan, 1858 from Port Phillip (Victoria). The affinities of this species cannot be concluded from the description.

Hippolyte Layi Owen, 1839 (= *Spirontocaris layi* Rathbun, 1904) from Monterey, California. This species either belongs to the genus *Heptacarpus* or *Eualus,* but nothing is known of the presence or absence of an exopod on the third maxilliped. Bate (1866 a) reported the species from Esquimalt Harbour (British Colombia).

Hippolyte Lovenii Rathke, 1843 from Molde (Norway). This species is identical either with *Thoralus cranchii* or with *Eualus occultus.* As Rathke in his description does not mention the presence or absence of a mandibular palp and also does not state the number of carpal joints of the second pereiopod, it is impossible to find the real identity of the species.

Hippolyte marioni Gourret, 1887 from the Gulf of Marseilles. Gourret regarded the species as very closely related to *Eualus occultus* (Lebour) which was named *Hippolyte Cranchii* by him. The species shows a combination of such characters, that if Gourret's (1888) description and figures are correct, a new genus has to be erected for this species. It namely has the mandible with an incisor-process and a threejointed palp, the carpus of the second pereiopod sevenarticulate and the last three pereiopods (the third at least) provided with a distinct exopod. The last character points to a juvenile specimen, but even then the combination of the shape of the mandible and the 7 jointed carpus is unique for a european species or even genus. Examination of the type is needed.

Hippolyte Quoyanus H. Milne Edwards, 1837 b from New Guinea. The identity of the species may not be concluded with certainty from the description, perhaps it belongs to *Hippolyte ventricosa.*

Hippolyte restrictus A. Milne Edwards, 1878 from the Canary Islands. The description is insufficient for recognizing the species.

Hippolyte serratus H. Milne Edwards, 1837 b from Jarvis Bay. I am unable to identify this species with any other known or to find its place among the Hippolytidae.

Hippolyte Yarrellii Thompson, 1853 from Weymouth Bay (S. England). This species is identical either with *Thoralus cranchii* or with *Eualus occultus.* Thompson in his description and figures gives too little details to make the identity of the species certain.

Latreutes ceylonensis Pearson, 1905 from Ceylon. As Kemp (1914) already pointed out, this species

shows much affinity to *Gelastocaris paronae*. Reexamination of the typespecimen is needed.

Merhippolyte orientalis Bate, 1888 from off New Guinea. This species must be rejected as the description is insufficient and made after a badly damaged specimen, examination of which gave no more data for the identification of the species. According to Calman (Vid. De Man, 1907, p. 426), who examined the type, this is in such a bad condition that it is impossible to determine its identity; according to De Man it is certain that we have to do here with a real *Merhippolyte*, as Calman could observe arthrobranchs at the bases of the pereiopods, in this respect he is followed by Kemp (1914); in my opinion this conclusion, however, is not entirely justified; it should be so if we knew with certainty that the specimen really belongs to the family Hippolytidae, but according to the description and Calman's additional notes, it seems very well possible that it in reality is a Pandalid prawn. The pereiopods, which afford the main differences between the two families are lacking in the specimen; all remaining characters, which are known from it, also may be found in the family Pandalidae.

Nauticaris futilirostris Bate, 1888 from Japan. It is possible that this species does not belong to the genus *Nauticaris*, but is a member of *Eualus* or *Heptacarpus*.

Palemon Margaritaceus Risso, 1816 (= *Alpheus Margaritaceus* Risso, 1826) from Nice. This species probably is identical with *Hippolyte inermis*, as the rostrum is stated to lack teeth on the dorsal margin and to be provided with two teeth on the lower margin. The only difference I could find is the fact that Risso states that the first two legs of his species are equal in shape, moreover he does not mention the supraorbital spines.

Palemon Microramphos Risso, 1816 from Nice. This species generally is considered identical with *Thoralus cranchii*, but Risso's description is not sufficient to conclude if the species really belongs to *Thoralus cranchii* or to *Eualus occultus*. If, however, Risso's species really is identical with Leach's, than the name *microramphos* has to be used for it as this name is older than *cranchii*.

Spirontocaris macrodonta Hart, 1930 from Canada. As the publication in which this species was described is not at my disposal, I do not know to which of the four genera *Spirontocaris* s.s., *Lebbeus*, *Eualus* or *Heptacarpus* it belongs [1]).

Spirontocaris sinensis Yu, 1931 from Chefoo (China). This species either belongs to *Eualus* or to *Heptacarpus*. Nothing is said in the description of the exopod on the third maxilliped.

Spirontocaris spathulirostris Yokoya, 1933 from Japan. As in the previous species here nothing is known about the exopod of the third maxilliped, the species may belong to *Eualus* or *Heptacarpus*.

Tozeuma serratum A. Milne Edwards, 1883 from the West Indies. This species perhaps belongs to a new genus as the carpus of the second pereiopod contains 7 segments. Nothing is known of the oral parts and of the branchial formula.

Vianellia dorsiocullata Nardo, 1847 (= *Cancer dorsiocullatus* Nardo, 1847) from the Adriatic Sea. By the short first chelipedes and the slender second pair this species may easily be identified

1) After the present paper had gone to press, I received through the kindness of Miss J. F. L. Hart (now Mrs. G. C. Carl) her 1930 paper. At the same time Mrs. Carl informed me that according to Dr. Belle A. Stevens *Spirontocaris macrodonta* Hart is identical with *S. prionota* (Stimps.), with which conclusion I entirely agree.

to be a Hippolytid prawn. The figure of Nardo (1869) makes certain identification not possible, but the animal looks most like *Thoralus cranchii* or one of the allied forms.

Virbius rectifrons Czerniavsky, 1884 and *Virbius tenuirostris* Czerniavsky, 1884 both from the Black Sea. These forms are very young specimens probably of *Hippolyte longirostris*.

Nomina nuda

Hetairus brevipes Kobjakova, 1936 from the Siberian eastcoast.
Hetairus heterochaela Kobjakova, 1936 from the Siberian eastcoast.
Hetairus longidactyla Kobjakova, 1936 from the Siberian eastcoast.
Hetairus longipes Derjugin & Kobjakova, 1935 from the Japanese Sea.
Hetairus spinirostris Kobjakova, 1936 from the Siberian eastcoast.
Hetairus ushakovi Kobjakova, 1936 from the Siberian eastcoast.
Hippolyte Carneus Roux, 1931, locality unknown.
Hippolyte gracilis Leuckart, 1847 a, from Iceland.
Hippolyte Lygdamis White, 1847 a, from the Philippine Islands.
Hippolyte Macandreae Bell, 1847, from the British coasts.
Hippolyte Metis White, 1847 a, from Chile.
Hippolyte rubrosignata Wagner, 1885, from the White Sea.
Hippolytes carneus (Risso MSS) Monod, 1931, from Mediterranean.
Hippolytes incarnatus (Risso MSS) Monod, 1931, from Mediterranean.
Lysmata nilita (Risso MSS) Monod, 1931, from Mediterranean.
Spirontocaris spinus var. *laevidens* Derjugin & Kobjakova, 1935, from the Japanese Sea.

Species described as Hippolytidae, but not belonging to that family:

Amphiplectus depressus Bate, 1888 = probably a species of Nematocarcinidae (vid. Calman, 1906).
Hippolyte bispinosa De Haan, 1841 = *Sicyonia bispinosa* (De Haan) (Peneidae).
Hippolyte costata Leuckart, 1847 b = *Pontophilus* spec. ? (Crangonidae).
Hippolyte cristata De Haan, 1841 = *Sicyonia cristata* (De Haan) (Peneidae).
Hippolyte denticulata De Haan, 1841 = *Caridina denticulata* (De Haan) (Atyidae).
Hyppolyte Desmarestii Millet, 1831 = *Atyaephyra desmarestii* (Millet) (Atyidae).
Hippolyte elongatus Guérin-Méneville, 1857 = *Xiphocaris elongata* (Guérin-Méneville) (Atyidae).
Hippolyte gracilipes Randall, 1839 = ? *Palaemon* spec. (vid. GIBBES, 1850 a, p. 197).
Hippolyte macrocheles Hailstone, 1835 = *Alpheus macrocheles* (Hailstone) (Alpheidae)..
Hippolyte paludosa Gibbes, 1850 = *Palaemonetes paludosus* (Gibbes) (Palaemonidae).
Hippolyte parvulus De Haan, 1841 = *Sicyonia parvula* (De Haan) (Peneidae).
Hippolyte ? rubra Hailstone, 1835 = *Alpheus macrocheles* (Hailstone) (Alpheidae).
Hippolyte spinicaudus H. Milne Edwards, 1837 b = *Chlorotocella spinicauda* (H. Milne Edwards) (Pandalidae).
Hippolyte Thompsoni Bell, 1851 = *Pandalina brevirostris* (Rathke) (Pandalidae).
Hippolythes variegatus Risso, 1826 = *Athanas nitescens* (Leach) (Alpheidae).
Virbius (?) jactans Nobili, 1904 = *Chlorocurtis jactans* (Nobili) (Pandalidae).

Virbius variegatus (Risso, 1826) Carus, 1885 = *Athanas nitescens* (Leach) (Alpheidae) vid. under *Hippolythes variegatus* Risso.

A survey of the Hippolytid larvae is given by Gurney (1939). According to this author the genera *Eretmocaris* Bate (1888), *Hippocaricyphus* Coutière (1907) and *Miersia* Chun (1888) are based on larval Hippolytidae. The species of *Eretmocaris* probably belong to the genera *Lysmata* and *Hippolysmata*, the only species of *Miersia* is a *Lysmata*. The following species of these larval genera have been described:

Eretmocaris Bate, 1888

Type: *Eretmocaris remipes* Bate.

corniger Bate, 1888. Distribution: Southern Atlantic Ocean.
dolichops Ortmann, 1893. Distribution: Southern Atlantic Ocean.
longicaulis Bate, 1888. Distribution: Pacific Ocean west of the Marianas.
remipes Bate, 1888. Distribution: Pacific Ocean south of Japan.
stylirostris Bate, 1888. Distribution: Southern Atlantic Ocean.

Hippocaricyphus Coutière, 1907

Type: *Hippocaricyphus acutus* (Coutière).

acutus (Coutière, 1905). Synonym: *Caricyphus acutus* Coutière, 1905. Distribution: Near the Azores.
bigibbosus (Coutière, 1905). Synonym: *Caricyphus bigibbosus* Coutière, 1905. Distribution: Near the Azores.

Miersia Chun, 1888 (vid. Lysmata)

REPORT ON THE MATERIAL EXAMINED

Saron Thallwitz, 1891

Both species of this genus are present in the collections studied.

Saron marmoratus (Oliv.)

? Alpheus marmoratus Latreille, 1806, Gen. Crust. Ins., vol. 1, p. 53 (nom. nud.).
Palaemon marmoratus Olivier, 1811, Encycl. méth. Hist. nat., vol. 8, p. 663.
Alpheus marmoratus Lamarck, 1818, Hist. nat. Anim. s. Vert., vol. 5, p. 205.
Palaemon marmoratus Latreille, 1818, Tabl. encycl. méth. Hist. nat., vol. 24, p. 5, pl. 319 fig. 3.
Hippolyte Leachii Guérin, 1829-44, Icon. Règne anim., vol. 2 Crust., pl. 21 fig. 4, vol. 3 Crust., p. 15.
Hippolyte gibberosus H. Milne Edwards, 1837 a, Cuvier's Règne anim., ed. 4 vol. 17, p. 143, vol. 18, pl. 53 fig.4 .
Hippolyte gibberosus H. Milne Edwards, 1837 b, Hist. nat. Crust., vol. 2, p. 378.
Hippolyte marmoratus H. Milne Edwards, 1837 b, Hist. nat. Crust., vol. 2, p. 379, pl. 25 figs. 8, 9.

Hippolyte Leachii Guérin, 1838, Duperrey's Voy. Coquille, Zool., vol. 2 pt. 2 n. 1, p. 37.
Alpheus marmoratus H. Milne Edwards, 1838, Lamarck's Hist. nat. Anim. s. Vert., ed. 2 vol. 5, p. 355.
Hippolyte marmoratus Randall, 1839, Journ. Acad. nat. Sci. Philad., vol. 8, p. 141.
Hippolyte marmoratus White, 1847 a, List Crust. Brit. Mus., p. 76.
Hippolyte marmorata Gibbes, 1850 a, Proc. Amer. Ass. Adv. Sci., vol. 3, p. 197.
Hippolyte marmorata Gibbes, 1850 b, Proc. Acad. nat. Sci. Philad., 1850, p. 25.
Hippolyte gibbosus Dana, 1852 b, U.S. Explor. Exped. vol. 13, p. 565.
Hippolyte gibbosa Dana, 1855, U.S. Explor. Exped., vol. 13, atlas, p. 12, pl. 36 fig. 4.
Hippolyte Hemprichii Heller, 1861, Verh. zool.-bot. Ges. Wien, vol. 11, p. 29.
Hippolyte Hemprichii Heller, 1862 a, S. B. Akad. Wiss. Wien, vol. 44 pt. 1, p. 275, pl. 3 fig. 23.
Hippolyte gibbosus Heller, 1865, Reise Novara, Zool., vol. 2 pt. 3, p. 120.
Hippolite gibberosus Hess, 1865, Arch. Naturgesch., vol. 31 pt. 1, p. 169.
Hippolyte gibberosus Frauenfeldt, 1868, Verh. zool.-bot. Ges. Wien, vol. 18, p. 294.
Hyppolite Kraussii Bianconi, 1869, Mem. Accad. Sci. Bologna, ser. 2 vol. 9, p. 200, pl. 1 a fig. 2 a.
Hippolyte gibbosus Streets, 1877, Bull. U. S. Nat. Mus., vol. 7, p. 119.
Hippolyte Kraussii Hilgendorf, 1879, Mber. Akad. Wiss. Berlin, 1878, p. 836.
Hippolyte Hemprichii Kossmann, 1880, Zool. Ergebn. Reise Roth. Meer., p. 82.
Hippolita spec ? Richters, 1880, Beitr. Meeresfauna Mauritius, p. 165, pl. 17 fig. 30.
Hippolyte hemprichii p. p. De Man, 1881, Notes Leyden Mus., vol. 3, p. 107.
Hippolyte gibberosus Haswell, 1882, Catal. Aust. Crust., p. 185.
Hippolyte gibberosa p. p. De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 533.
Hippolyte marmorata De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 533.
Hippolyte marmorata Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 497, pl. 36 fig. 18.
Saron gibberosus Thallwitz, 1891, Zool. Anz., vol. 14, p. 100.
Saron gibberosus Thallwitz, 1892, Abh. zool.-anthrop. Mus. Dresden, vol. 3 pt. 3, p. 25.
Hippolyte gibberosus Sharp, 1893, Proc. Acad. nat. Sci. Philad., 1893, p. 116.
Hippolyte marmorata Sharp, 1893, Proc. Acad. nat. Sci. Philad., 1893, p. 116.
Saron marmoratus Ortmann, 1894 a, Denkschr. med.-naturw. Ges. Jena, vol. 8, p. 15.
Hippolyte marmoratus Casto de Elera, 1895, Catal. Faun. Filip., vol. 2, p. 567.
Hippolyte gibberosa De Man, 1897, Zool. Jb. Syst., vol. 9, p. 761, vol. 10, pl. 36 fig. 68.
Hippolyte hemprichii p. p. De Man, 1897, Zool. Jb. Syst., vol. 9, p. 764.
Hippolyte gibberosus Whitelegge, 1897, Mem. Aust. Mus., vol. 3, p. 146.
Saron marmoratus Borradaile, 1898, Proc. zool. Soc. Lond., 1898, p. 1009.
Hippolyte gibberosus Coutière, 1898, Bull. Mus. Hist. nat. Paris, vol. 4, p. 198.
Hippolyte gibberosus Anonymus, 1899, Mem. Aust. Mus., vol. 3, p. 518.
Saron marmoratus Anonymus, 1899, Mem. Aust. Mus., vol. 3, p. 518.
Saron marmoratus Borradaile, 1899, Willey's Zool. Res., vol. 4, p. 413.
Hippolyte gibberosus Coutière, 1899, Ann. Sci. nat. Zool., ser. 8 vol. 9, textfigs. 83, 154, 179, 183, 192, 242, 344, 354.
Hippolyte marmoratus Coutière, 1899, Ann. Sci. nat. Zool., ser. 8 vol. 9, textfig. 362.
Saron marmoratus Coutière, 1900, C. R. Ass. Franc. Av. Sci., vol. 29 pt. 1, p. 187.
Saron marmoratus Nobili, 1901, Ann. Mus. zool. Univ. Napoli, vol. 1 pt. 3, p. 3.
Saron gibberosus De Man, 1902, Abh. Senckenb. naturf. Ges., vol. 25, p. 852, pl. 26 fig. 57.
Saron gibberosus Lenz, 1905, Abh. Senckenb. naturf. Ges., vol. 27, p. 382.
Nauticaris grandirostris Pearson, 1905, Rep. Ceylon Pearl Oyster Fish., vol. 4, p. 79, pl. 1 fig. 6.
Saron gibberosus Nobili, 1906 a, Bull. sci. France Belg., vol. 40, p. 35.
Saron gibberosus Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 40.
Spirontocaris marmorata Rathbun, 1906, Bull. U. S. Fish Comm., vol. 23 pt. 3, p. 913.
Saron gibberosus Nobili, 1907, Mem. Accad. Sci. Torino, ser. 2 vol. 57, p. 358.
Hippolyte marmoratus Bedot, 1909, Rev. Suisse Zool., vol. 17, p. 166.
Saron marmoratus Coutière, 1910 a, Bull. Soc. philom. Paris, ser. 10 vol. 2, p. 71, textfigs. 1-4.
Saron marmoratus Coutière, 1910 b, C. R. Acad. Sci. Paris, vol. 150, p. 1263.

Saron gibberosus Lenz, 1912, Ark. Zool., vol. 7 pt. 29, p. 2.
Saron marmoratus Kemp, 1914, Rec. Indian Mus., vol. 10, p. 84.
Saron gibberosus Pesta, 1914, Denkschr. Akad. Wiss. Wien, vol. 89, p. 674.
Saron marmoratus Pesta, 1914, Denkschr. Akad. Wiss. Wien, vol. 89, p. 674.
Spirontocaris gibberosa Balss, 1914 a, Abh. Bayer. Akad. Wiss., suppl. vol. 2 pt. 10, p. 46.
Saron marmoratus Stebbing, 1914 a, Ann. S. Afr. Mus., vol. 15, p. 34.
Saron marmoratus Balss, 1915, Denkschr. Akad. Wiss. Wien, vol. 91 suppl., p. 24.
Saron marmoratus Kemp, 1916, Rec. Indian Mus., vol. 12, p. 385.
Saron marmoratus Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 401.
Saron gibberosus Parisi, 1919, Atti Soc. Ital. Sci. nat., vol. 58, p. 74.
Saron marmorata Edmondson, 1923, Bull. Bishop Mus. Honolulu, vol. 5, p. 30.
Saron gibberosus Sendler, 1923, Abh. Senckenb. naturf. Ges., vol. 38, p. 46.
Saron marmoratus Edmondson, 1925, Bull. Bishop Mus. Honolulu, vol. 27, p. 6.
Spirontocaris marmorata McNeill, 1926, Aust. Zool., vol. 4, p. 301, fig. 1.
Saron marmoratus Gravely, 1927, Bull. Madras Govt. Mus., n. ser. vol. 1, p. 136, pl. 19 fig. 1.
Saron marmoratus Pesta, 1933, Zool. Anz., vol. 104, p. 279.
non *Spirontocaris gibberosa* Yokoya, 1933, Journ. Coll. Agric. Tokyo, vol. 12, p. 25, fig. 8.
Saron marmoratus Boone, 1935, Bull. Vanderbilt mar. Mus., vol. 6, p. 187, pl. 51.
Saron marmoratus Ramadan, 1936, Bull. Fac. Sci. Egypt. Univ., vol. 6, p. 22.
Saron marmoratus Gurney, 1937, Discovery Rep., vol. 14, p. 390, figs. 106-112.
Saron marmoratus Kubo, 1940, Journ. Imp. Fish. Inst. Tokyo, vol. 34, p. 80.

Siboga Expedition

Station 58, anchorage off Seba, Sawoe Island; reef; April 25, 1899. — 2 specimens 21 and 44 mm.
Station 60, Hansisi, Semaoe Island, S. of Timor; shore; April 27 and 28, 1899. — 1 specimen 26 mm.
Station 79 b, Kabala doea Island, Borneo Bank; reef; June 12 and 13, 1899. — 1 damaged specimen 31 mm.
Station 127, Tahoena Bay, Sangihe Island; reef; July 20 and 21, 1899. — 2 specimens 30 and 39 mm.
Station 129, anchorage off Kawio and Kamboling Islands, Kawio Group, N.E. of Celebes; reef; July 22 and 23, 1899. — 1 specimen 53 mm.
Station 133, anchorage off Liroeng, Salebaboe Island, Talaud Group; reef; July 25-27, 1899. — 5 specimens 25-50 mm.
Station 172, anchorage between Geser and Ceram-laoet; reef; August 26-28, 1899. — 3 specimens 13-30 mm.
Station 174, Waroe Bay, northcoast of Ceram; reef; August 28 and 29, 1899. — 2 specimens 31 and 39 mm.
Station 193, Sanana Bay, eastcoast of Sanana, Soela Islands; reef; September 13 and 14, 1899. — 15 specimens (included ovigerous females) 24-53 mm.
Station 209, anchorage off the southpoint of Kabaena Island; reef; September 23, 1899. — 1 specimen 38 mm.
Station 213, Salajar anchorage and surroundings, including Pasitanete Island; reef; September 26-October 26, 1899. — 2 specimens (included 1 ovigerous female) 28 and 41 mm.
Station 248, anchorage off Roemahloesi, northpoint of Tioor Island; reef; December 4 and 5, 1899. — 2 specimens 29 and 42 mm.
Hansisi, Semaoe Island (Station 60, April 27 and 28, 1899 or Station 303, February 2-5, 1900); reef. — 1 specimen 38 mm.

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Tidore; shore; September 24-29, 1929. — 1 specimen 28 mm.
Wotap, Tanimbar Islands; shore and reef; October 20-23, 1929. — 7 specimens (included ovigerous females) 31-42 mm.

Koepang, Timor; reef; October 31-December 10, 1929. — 10 specimens 24-46 mm.
Near Koepang, Timor; reef and shore; November 18-20, December 3, 1929. — 14 specimens 29-46 mm.
Kera near Timor; November 11-13, 15-16, 22-23, 1929. — 14 specimens 17-49 mm.
Obi latoe; shore and reef; April 23-27, 1930. — 14 specimens (included ovigerous females) 19-47 mm.
Morotai; June 3-10, 1930. — 9 specimens (included ovigerous female) 25-39 mm.
Kaledoepa; August 27, 1930. — 1 specimen 34 mm.
Boo Islands; October 5, 1930. — 2 specimens 13 and 31 mm.
Ambon, Batoe merah; October 15, 1930. — 4 specimens 26-34 mm.
Station 363, west of the Kai Islands, 6° 02'.0 S, 131° 52'.0 E; October 23, 1930. — 1 specimen 19 mm.

Museum Leiden

Jidda; 1880; leg. J. A. Kruyt. — 1 specimen 26 mm.
Java; leg. C. G. C. Reinwardt. — 1 specimen 34 mm (dry).
Bay of Batavia; 1927; leg. W. C. van Heurn. — 2 specimens (both ovigerous females) 41 and 42 mm.
Bay of Gorontalo, N.E. Celebes. — 1 specimen 40 mm.
Timor; 1864; leg. E. W. A. Ludeking. — 1 specimen 48 mm.
Timor; leg. G. F. Wienecke. — 2 specimens 36 and 44 mm.
Kisar, N. of Timor; 1897; leg. K. Schädler. — 1 specimen 47 mm.
Ambon; 1864; leg. E. W. A. Ludeking. — 4 specimens (included ovigerous females) 33-44 mm.
Ceram; 1864; leg. D. J. Hoedt. — 2 specimens 41 and 44 mm.
Waigeo, N. W. of New Guinea; 1864; leg. H. A. Bernstein. — 1 specimen 38 mm.
Fakfak, New Guinea; September 19, 1908; leg. Palmer van den Broek. — 3 specimens 39-48 mm.
Pacific Ocean; coll. Mus. Godeffroy. — 2 specimens 48 and 54 mm (dry).
Locality unknown. — 1 specimen 32 mm.

Museum Amsterdam

Inhaca, Portuguese E. Africa; leg. C. J. van der Horst. — 2 specimens 26 and 48 mm.
Goenoeng Sitoli, Nias, off westcoast of Sumatra; 1910; leg. J. P. Kleiweg de Zwaan. — 2 specimens 22 and 46 mm.
Berhala Island, E. of Sumatra; December 26, 1929; leg. J. C. van der Meer Mohr. — 1 specimen 31 mm.
Java Sea; leg. capt. Storm. — 2 specimens 34 and 37 mm.
Lesser Soenda Islands; December 18, 1909; leg. H. J. M. Laurense. — 1 specimen 36 mm.
Southcoast of Soemba; December 29, 1909; leg. H. J. M. Laurense. — 1 specimen 43 mm.
Larantoeka, Flores; June, 1909; leg. G. A. J. van der Sande. — 6 specimens 29-48 mm.
Moluccas. — 2 specimens 39 and 48 mm.
Ambon; 1913; leg. M. M. Willemsz Geerooms. — 1 specimen 40 mm.
Banda; leg. E. van der Velde. — 6 specimens 25-42 mm.
Locality unknown. — 1 specimen 33 mm.

The striking variability of the third maxillipede and first pereiopod in the male specimens of the present species, which has been the cause that for a long time it has been considered to consist of two separate species, is dealt with extensively by Coutière (1910) and Kemp (1914). I entirely agree with the conclusions of these two authors.

The specimen from Jidda present in the collection of the Leiden Museum, was described together with 8 specimens of the following species by De Man (1881) as *Hippolyte hemprichii*

eller. The specimen from the Java Sea (Museum Amsterdam) too is mentioned in literature (De an, 1897).

Vertical distribution. The present species is one of the most common forms of the indowestacific coralreefs.

Horizontal distribution. The species is known from the entire indowestpacific region. Records n literature are: Red Sea (Heller, 1861; Kossmann, 1880; Nobili, 1906 b), Suez (Balss, 915), Tor, Sinai Peninsula (Lenz, 1912), Ras el Millan, Sinai Peninsula (Balss, 1915), Sherm heik [= ? El Sherm], Sinai Peninsula (Balss, 1915), Naiwibi [= ? Nuebe, on the Gulf of Aqaba] Balss, 1915), Ghardaqa, Gulf of Suez (Ramadan, 1936; Gurney, 1937), Habban (Balss, 915), El Qoseir (Balss, 1915), Berenice (Balss, 1915), St. John Island [= Zebirget] (Balss, 915), Halaib (Balss, 1915), Jidda (De Man, 1881, 1897; Balss, 1915), Raveiya (Balss, 915), El Lith (Balss, 1915), Kunfida (Balss, 1915), Eritrea (Nobili, 1901, 1906 b), Massawa Balss, 1915), Sarso Island (Balss, 1915), Anfila (Balss, 1915), Kamaran Island (Balss, 915), Jibuti (Coutière, 1898, 1900, 1910 a; Nobili, 1906 b), Musha Islands, French Somaliand (Nobili, 1906 b), Zanzibar (Ortmann, 1894 a; Coutière, 1900; Lenz, 1905), Mozambique (Bianconi, 1869; Hilgendorf, 1879; Stebbing, 1914 a), ? Indian Ocean Latreille, 1806), Aldabra (Lenz, 1905), Madagascar (Coutière, 1900), Mauritius Richters, 1880; Kemp, 1914), Amirante Islands (Borradaile, 1917), Coetivy, Seychelles Borradaile, 1917), Salomon Island, Chagos Archipelago (Borradaile, 1917), Maldive Archipelago (Borradaile, 1917), Minikoi (Borradaile, 1917), off Makalla, southcoast of Arabia (Nobili, 1906 a), Kubbar Island, Persian Gulf (Kemp, 1914), N.E. of Arzana Island, Persian Gulf (Nobili, 1906 a), Karachi (Kemp, 1914), Kilakarai and Pamban, S. India (Kemp, 914), Galle, Ceylon (Pearson, 1905), Krusadai Island, Gulf of Manaar, Ceylon (Gravely, 927), Port Canning, Ganges Delta (Kemp, 1914), Andaman Islands (Kemp, 1914, 1916), Nicobar Islands (Heller, 1865; Frauenfeldt, 1868), Satsuma, Japan (Balss, 1914 a), Ryukyu Archipelago (Parisi, 1919), Manila and Malabon, Luzon (Casto de Elera, 1895), Sebu, Philippines (Thallwitz, 1891, 1892), Atjeh (De Man, 1897), Edam and Noordwachter Islands, off N.W. Java (De Man, 1888 a), Java Sea (De Man, 1897), Bali (Boone, 1935), Ternate (De Man, 1902), Ambon (De Man, 1888 a), Nivani, Louisiade Archipelago, Papua (Borradaile, 899), Australia (Olivier, 1811; Lamarck, 1818; H. Milne Edwards, 1837 b, 1838; White, 1847 a; Hess, 1865; Haswell, 1882), Queensland (Kemp, 1914), Falcon Island, Palm Isles, Queensland (Boone, 1935), Capricorn Group, Queensland (McNeill, 1926), New Zealand (Coutière, 1900), South Seas (H. Milne Edwards, 1937 b; Ortmann, 1890; Sharp, 1893) Micronesia (Kubo, 1940), Ualan [= Strong Island], Caroline Islands (Guérin, 829-44, 1838), Hogolu Island [= Truk], Caroline Islands (Coutière, 1910 a), Rotuma (Borradaile, 1898), Fiji (Dana, 1852 b; Coutière, 1910 a), Funafuti (Whitelegge, 1897; Borradaile, 1898; Anonymus, 1898), Tongatabu (Coutière, 1910 a), Samoa (Sharp, 1893; Coutière, 1900; Pesta, 1914), Tahiti (Heller, 1865; Sendler, 1923), Mangareva and Amana, Tuamotu Archipelago, (Nobili, 1907), Marquesas (Boone, 1935), Palmyra (Edmondson, 1923), Hawaiian Archipelago (Randall, 1839; Gibbes, 1850 a, b; Dana, 1852 b; Streets, 1877: Sharp, 1893; Rathbun, 1906; Pesta, 1933), Honolulu, Oahu (Rathbun, 906).

Saron neglectus De Man

Hippolyte hemprichii p.p. De Man, 1881, Notes Leyden Mus., vol. 3, p. 107.
Hippolyte gibberosa p.p. De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 533.
Hippolyte gibberosa Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 497.
Saron neglectus De Man, 1902, Abh. Senckenb. naturf. Ges., vol. 25, p. 854, pl. 26 fig. 58.
Saron neglectus Coutière, 1910 a, Bull. Soc. philom. Paris, ser. 10 vol. 2, p. 71, figs. 1-4.
Saron neglectus Coutière, 1910 b, C. R. Acad. Sci. Paris, vol. 150, p. 1263.
Saron neglectus Kemp, 1914, Rec. Indian Mus., vol. 10, p. 87.
Saron neglectus Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 401.
Saron neglectus Tattersall, 1921, Journ. Linn. Soc. Lond. Zool., vol. 34, p. 382.

Siboga Expedition

Station 89, Kanioengan-ketjil Island, eastcoast of Borneo; reef; June 21, 1899. — 1 specimen 17 mm.
Lamakera, Solor Island (Station 61, May 1 and 2, 1899 or Station 304, February 6-8, 1900); reef. — 14 specimens (included ovigerous females) 24-33 mm.

Snellius Expedition

Kera near Timor; November 11-13, 1929. — 8 specimens (included ovigerous female) 12-35 mm.
Near Koepang, Timor; November 18-20, 1929. — 1 specimen 34 mm.
Obi latoe; shore and reef; April 23-27, 1930. — 8 specimens (included ovigerous females) 18-34 mm.

Museum Leiden

Jidda; 1880; leg. J. A. Kruyt. — 8 specimens (1 ovigerous female) 24-32 mm.

Museum Amsterdam

Goenoeng Sitoli, Nias, off westcoast of Sumatra; 1910; leg. J. P. Kleiweg de Zwaan. — 2 specimens 52 and 58 mm.
Edam Island, Bay of Batavia; leg. capt. Storm. — 1 specimen (ovigerous female) 34 mm.

In my material the characters given by De Man (1902) for the present species appear to be constant. Eight of the nine specimens described by De Man (1881) as *Hippolyte hemprichii* Heller from Jidda belong to the present species, the other specimen is, as pointed out above, *Saron marmoratus*. A specimen from the private collection of De Man, which after the death of this carcinologist, came into possession of the Zoological Museum at Amsterdam, and which was described by him (1888 a) as *Hippolyte gibberosa* from Edam Island also proved to be *S. neglectus*, as already was stated by De Man himself (1902).

De Man (1902) in his synonyms of *Saron neglectus* mentions: „*Hippolyte gibberosa* De Man, ... in: Zoolog. Jahrb. Syst. IX, 1897, p. 761 (partim)." The specimens described by him in 1897 as *Hippolyte gibberosa*, in my opinion all belong to *Saron marmoratus* as he states (De Man, 1897, p. 764): „Bei sämmtlichen 9 Exemplaren von *Hipp. gibberosa* aus der Java-See sowie bei den 3 älteren Weibchen aus Atjeh tragen die Meropoditen der drei hintern Fusspaare alle je zwei Dornen." Now, the presence of these spines is one of the features for distinguishing the two species *S. neglectus* and *S. marmoratus*. In *S. marmoratus* as a rule two spines are present on the

neri of the last three pereiopods, though sometimes in some of the legs only one spine may be visible; in *S. neglectus* only one spine is present there, I never saw in all my material of this species a specimen with two spines.

Vertical distribution: Like the previous this species also is a litoral form, which mostly inhabits coralreefs.

Horizontal distribution. The species has about the same range of distribution as *S. marmoratus*. The records in literature are: Jidda, Red Sea (De Man, 1881, 1897), Tella tella Kebira, Red Sea (Tattersall, 1921), Jibuti (Coutière, 1910 a), Madagascar (Coutière, 1910 a), Egmont Reef, Seychelles (Borradaile, 1917), Andaman Islands (Kemp, 1914), Kagoshima, Japan (Ortmann, 1890; De Man, 1902), Edam Island, Bay of Batavia (De Man, 1888 a, 1902), Ternate (De Man, 1902), New Caledonia (Coutière, 1910 a).

Nauticaris Bate, 1888

Of this genus six species and one variety have been described: *N. brucei, futilirostris, magellanicus, marionis, stewarti, unirecedens* and *marionis* var. *chilensis*. *N. futilirostris* probably is a species of *Eualus* or *Heptacarpus*. *N. unirecedens* is synonymous with *Hippolysmata vittata* Stimps. (vid. De Man, 1907). *N. stewarti* is synonym with *N. marionis* (vid. Chilton, 1909). According to Calman (1906), who examined types of both *N. marionis* and *N. magellanicus*, these species differ in the following feature: an exopod is present at the base of the third maxillipede in *N. magellanicus*, but is absent in *N. marionis*; in pl. 108 fig. 2 of Bate's (1888) report on the *Macrura* of the Challenger Expedition the opened carapace of one of the cotypes of *N. marionis* is figured, here a distinct exopod is visible at the base of the third maxillipede. This makes it quite certain that Bate's material of *N. marionis* is not homogeneous, but that specimens of *N. magellanicus* were intermixed with those of the real *N. marionis*; one is inclined to believe that his specimens from the Marion and Edward Islands are the real *N. marionis* and that of the Falkland Islands is *N. magellanicus*, but this has to be proven by examination of the typematerial. *N. brucei*, which possesses a small exopod at the base of the third maxillipede differs from both *N. magellanicus* and *N. marionis* by the total absence of a pterygostomial spine on the carapace; this feature it has in common with *N. marionis* var. *chilensis*, from which it differs in the rostral formula. As the rostral formula in the present family provides a very variable character, examination of the types for other distinguishing characters is badly needed. The species described by Hodgson (1902) as *Merhippolyte australis* (and figured under the name *Hippolyte australis*) too belongs to the present genus, it is identical with *N. marionis*.

Merhippolyte Bate, 1888

Kemp (1914) mentions four species of the present genus. *M. orientalis* Bate, however, must be rejected as its identity can not be proven; as already pointed out (p. 23) it even is not certain that it belongs to the family Hippolytidae.

Ligur Sarato, 1885

One species of this genus is represented in the collections at hand.

Ligur uveae (Borr.)

Parhippolyte uveae Borradaile, 1899, Willey's Zool. Results, vol. 4, p. 414, pl. 38 fig. 11.
Ligur uveae Kemp, 1914, Rec. Indian Mus., vol. 10, p. 123.
Ligur uveae Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 401.
Ligur uveae Gordon, 1936 b, Proc. Linn. Soc. Lond., 1935-36, p. 102, textfig. 1.

Museum Leiden

Halmahera; leg. H. A. Bernstein. — 6 specimens 45-51 mm.

This rare species seems to be widely distributed over the entire indowestpacific region. It now is recorded for the first time from within the Malay Archipelago. It is treated extensively by Borradaile (1899) and Gordon (1936 b).

Vertical distribution. Gordon gives the following interesting note about the habitat of the species in Fiji: it lives in "landlocked pools of salt water shut off from the sea by coralrocks, through which, however, there is sufficiently rapid seapage to render the waterlevel in the pools influenced by the rise and fall of tides".

Horizontal distribution. The species is recorded from: Western Indian Ocean (Gordon, 1936 b), Aldabra (Borradaile, 1917; Gordon, 1936 b), Uvea, Loyalty Islands (Borradaile, 1899; Gordon, 1936 b), Fiji (Gordon, 1936 b).

Ligur ensiferus (Risso)

Palemon Ensiferus Risso, 1816, Hist. nat. Crust. Nice, p 106.
Alpheus ensiferus Risso, 1826, Hist. nat. Europe mérid., vol. 5, p. 76.
? *Palemon ensiferus* Costa, 1836, Fauna Regn. Napoli, Crost. Aracn., pt. 15, p. 5.
Alpheus ensiferus Carus, 1885, Prodr. Faun. Mediterr., vol. 1, p. 480.
Ligur Edwardsii Sarato, 1885, Monit. Étrang., vol. 9 n. 222, p. 2.
Ligus Edwardsii Lucas, 1885, Ann. Soc. ent. France, ser. 6 vol. 5, p. ccxix.
Ligur Edwardsi Senna, 1902, Bull. Soc. ent. Ital., vol. 34, p. 321, textfig. 6, pl. 17 figs. 1-17.
Ligur Edwardsi Riggio, 1905, Natural. Sicil., vol. 18, p. 97, figs. 1-4.
? *Alpheus ensiferus* Magri, 1911, Atti Accad. gioen. Sci. nat., ser. 5 vol. 4 pt. 14, p. 28.
Ligur Edwardsii Zariquiey, 1935 a, Bull. Inst. Catal. Hist. nat., vol. 35, p. 95.
Ligur edwardsii Gordon, 1936 b, Proc. Linn. Soc. Lond., 1935-36, p. 107, fig. 2.
? *Ligur Edwardsii* Calman, 1939, Sci. Rep. John Murray Exped., vol. 6, p. 209.

The specimen described by Risso (1816, 1826) as *Palemon* or *Alpheus ensiferus*, undoubtedly belongs to the species at present best known as *Ligur edwardsii*, of which Senna (1902) and Riggio (1905) gave extensive descriptions. The length of Senna's specimens varied between 101 and 109 mm, Risso gives as length 110 mm. The rostrum in Risso's specimen measures 24 mm, in Senna's largest specimen 18 mm, in a specimen of Riggio, an ovigerous female of 105 mm, the rostrum was 22 mm long. Risso gives as rostral formula $\frac{5}{4}$, while that formula in *L. edwardsii* is $\frac{3-5}{3-5}$. Furthermore Risso mentions the characteristic long antennae, the red colour of the shrimp and the large antennal and branchiostegal spines. From all these facts the identity of *Palemon ensiferus* with *Ligur edwardsii* is undoubtedly shown.

The specimens referred by Costa to Risso's species to all probability do not belong to

it, as is shown by Costa's description; it is not clear, however, to which species the specimens of the italian author in reality belong. Magri (1921) gives too insignificant data about his *Alpheus ensiferus* to make the identity certain; the specimens perhaps may belong to the true *Alpheus*.

Vertical distribution. Risso's specimens were obtained from the "région de coraux". The depth at which Sarato's specimen was captured is unknown. Senna mentions the species from 656 and from 772-860 m, Riggio from 360-400 m, and Calman from 494 m.

Horizontal distribution. The species is recorded only from the Western Mediterranean: Catalonian Coast (Zariquiey Cenarro, 1935 a), Nice (Risso, 1816, 1826; Sarato, 1885; Lucas, 1885; Gordon, 1936 b), off S.E. Sardinia: 39° 03′ 46″ 2‴ N, 9° 27′ 47″ E and 39° 01′ 28″ 9‴ N, 9° 30′ 19″ 3‴ E (Senna, 1902), off Vergine Maria near Palermo, Sicily (Riggio, 1905). Costa's specimens were collected near Naples, those of Magri near Catania, Sicily. Calman (1939) records this species from the Maldive area (4° 58′ 42″ S, 73° 16′ 24″ E). Perhaps his specimen belongs to a separate species.

Barbouria Rathbun, 1912

The present genus was erected by Rathbun for a new species from Cuba, named by her *Barbouria poeyi*. This species, however, was already described as early as 1872 by Von Martens under the name *Hippolyte cubensis*, so that the correct name of the species becomes *Barbouria cubensis*. The genus *Barbouria* shows a striking resemblance to the genus *Ligur* Sarato. In fact the only difference of importance between the two genera is that in *Ligur* arthrobranchs are present on the bases of the first four pereiopods, while these arthrobranchs are totally absent in *Barbouria*. It is interesting to note that in *Ligur uveae* the arthrobranchs are large and well developed, while they are much smaller in *Ligur ensiferus*, as if there is a tendency in this genus to reduce the arthrobranchs.

Alope White, 1847

In the collections at my disposal one species of this genus is present.

Alope orientalis (De Man)

Alope palpalis Haswell, 1882, Catal. Aust. Crust., p. 193.
Hetairocaris orientalis De Man, 1890, Notes Leyden Mus., vol. 12, p. 122, pl. 6 fig. 16.
Hippolyte ponapensis Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 502, pl. 36 fig. 20.
Alope papalis Whitelegge, 1890, Journ. Roy. Soc. New S. Wales, vol. 23, p. 224.
Hippolyte ponapensis De Man, 1892 b, Notes Leyden Mus., vol. 14, p. 263.
Alope palpalis Stead, 1898, Zoologist, ser. 4 vol. 2, p. 211.
Alope australis Baker, 1904, Trans. Roy. Soc. S. Aust., vol. 28, p. 154, pl. 30.
Alope australis McCulloch, 1909, Rec. Aust. Mus., vol. 7, p. 313, fig. 17.
Alope australis Kemp, 1914, Rec. Indian Mus., vol. 10, p. 91, pl. 1 figs. 3-5.
Spirontocaris orientalis Kemp, 1914, Rec. Indian Mus., vol. 10, p. 124.
Alope australis Coulon, 1918, Bull. Soc. Étud. Sci. nat. Elbeuf, vol. 36, p. 20.
Alope australis Stebbing, 1919, Ann. Durban Mus., vol. 2, p. 121, pl. 19.
Alope australis Stebbing, 1921, Ann. Durban Mus., vol. 3, p. 22, fig. 5.
Alope australis Hale, 1927 a, Trans. Roy. Soc. S. Aust., 51, p. 308.
Alope australis Hale, 1927 b, Crust. S. Aust., vol. 1, p. 49, fig. 41.
Alope australis Hale, 1929, Trans. Roy. Soc. S. Aust., vol. 53, p. 67.

Museum Leiden

Ponape, Caroline Islands; coll. Mus. Godeffroy. — 2 ovigerous females 37 and 40 mm. Cotypes.

De Man (1890) described *Hetairocaris orientalis* nov. gen. nov. spec. from Ponape. This species was brought by Calman (1906) and Kemp (1914) to the genus *Spirontocaris* s.l. When examining the typespecimens of De Man's species, which are preserved in the collection of the Rijksmuseum van Natuurlijke Historie at Leiden, I found the mandible provided with a three-jointed palp. The species therefore cannot belong to the genus *Spirontocaris,* but has to be referred to *Alope.* Comparison with Baker's (1904) and Kemp's (1914) descriptions and figures of *Alope australis* made it clear that *Hetairocaris orientalis* is identical with that species. As De Man's description was published before that of Baker, the specific name *orientalis* has priority over the name *australis.* In the same year in which De Man published his description, Ortmann (1890) published the description of his new species *Hippolyte ponapensis,* which showed to be identical with De Man's species. Ortmann's specimens, property of the Museum of Strasbourg, like the specimen of the Museum at Leiden were obtained from the Museum Godeffroy and also originated from Ponape. As De Man (1892 b) stated, the description of *Hetairocaris orientalis* was published some months before that of *Hippolyte ponapensis.*

De Man in his description mentions nothing about the oral parts, which are rather extensively dealt with by Ortmann, who in a figure also shows the triarticulate palp of the mandible. The mandible in De Man's typespecimen, which is examined by me, lacks the incisorprocess, just like in Baker's (1904) and Kemp's (1914) specimens. Ortmann, however, indeed figures and describes that process; it is possible that Ortmann made a mistake and took the broadened part of the basal segment of the palp for the incisorprocess.

Vertical distribution. The species is a litoral form.

Horizontal distribution. The species is distributed over a large part of the indo-westpacific region. Records in literature are: Isezela, Natal (Stebbing, 1919), Durban (Stebbing, 1921), Arakan coast, Lower Burma (Kemp, 1914), Ponape, Caroline Islands (De Man, 1890, 1892 b; Ortmann, 1890), Australian coast (Haswell, 1882), Dirk Hartog Island, W. Australia (Hale, 1929), St. Francis Island, S. Australia (Hale, 1927 b), Kangaroo Island (Baker, 1904; Hale, 1927 a, b); Sydney (McCulloch, 1909), Port Jackson (Whitelegge, 1890; Stead, 1898; Coulon, 1918).

Alope spinifrons (H. Milne Edwards)

Hippolyte spinifrons H. Milne Edwards, 1837 b, Hist. nat. Crust., vol. 2, p. 377.
Alope palpalis White, 1847 a, List Crust. Brit. Mus., p. 75 (nom. nud.).
Alope palpalis White, 1847 b, Proc. zool. Soc. Lond., 1847, p. 124.
Alope palpalis White, 1848, Ann. Mag. nat. Hist., ser. 2 vol. 1, p. 226.
Alope palpalis Miers, 1874, Zool. Voy. Erebus Terror, Crust., p. 4, pl. 4 fig. 1.
Hippolyte spinifrons Miers, 1876, Catal. Crust. New Zeal., p. 80.
Alope palpalis Miers, 1876, Catal. Crust. New Zeal., p. 84.
non *Alope palpalis* Haswell, 1882, Catal. Aust. Crust., p. 193.
Hippolyte spinifrons Filhol, 1885, Bibl. Éc. haut. Étud., vol. 30 pt. 2, p. 52.
Alope palpalis Filhol, 1885, Bibl. Éc. haut. Étud., vol. 30 pt. 2, p. 52.

Hippolyte spirifrons Filhol, 1886, Miss. Ile Campbell, vol. 3 pt. 2, p. 431, pl. 53 fig. 13.
Alope palpalis Filhol, 1886, Miss. Ile Campbell, vol. 3 pt. 2, p. 433.
non *Alope papalis* Whitelegge, 1890, Journ. Roy. Soc. New S. Wales, vol. 23, 224.
Alope palpipes Sharp, 1893, Proc. Acad. nat. Sci. Philad., 1893, p. 112.
non *Alope palpalis* Stead, 1898, Zoologist, ser. 4 vol. 2, p. 211.
Alope palpalis Coutière, 1899, Ann. Sci. nat. Zool., ser. 8 vol. 9, textfigs. 36, 133, 155, 189, 194, 295.
Hippolyte spinifrons Lenz, 1901, Zool. Jb. Syst., vol. 14, p. 433.
Alope palpalis Thomson, 1903, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 8, p. 440, pl. 28 figs. 3-12.
Merhippolyte spinifrons Thomson, 1903, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 8, p. 444.
Alope palpalis Hutton, 1904, Index Faunae Nov. Zeal., p. 254.
Merhippolyte spinifrons Hutton, 1904, Index Faunae Nov. Zeal., p. 255.
Merhippolyte spinifrons Calman, 1906, Ann. Mag. nat. Hist., ser. 7 vol. 17, p. 32.
Alope palpalis McCulloch, 1909, Rec. Aust. Mus., vol. 7, p. 313, textfigs. 17^2, 17^3.
non *Merhippolyte spinifrons* Chilton, 1911, Trans. Proc. New Zeal. Inst., vol. 43, p. 547.
Alope palpalis Chilton, 1911, Trans. Proc. New Zeal. Inst., vol. 43, p. 547.
Alope palpalis Thomson, 1913, Trans. Proc. New Zeal. Inst., vol. 45, p. 240.
Alope palpalis Kemp, 1914, Rec. Indian Mus., vol. 10, p. 89, pl. 1 figs. 1, 2.

According to Kemp (1914) the identity of *Hippolyte spinifrons* H. Milne Edw. and *Alope palpalis* White is very probable, but not quite certain as Milne Edwards describes his species to have *"les épines suborbitaires extrêmement grandes et fortes"*. Now *Alope palpalis* has no suborbital, but very strong supraorbital spines. Kemp regards the word *"suborbitaires"* as a clerical error for supra-orbitaires, but he thinks it "not advisable to change the name of this well-known form." Filhol (1886), who gives a description and figure of *Hippolyte spinifrons* refers to the spines as "épines sus-orbitaires", which induced Kemp to remark that Filhol in this respect followed Milne Edwards; Stebbing (1919, p. 121) showed that in reality Filhol corrected Milne Edwards, as "épines sus-orbitaires" are supraorbital and "épines sub-orbitaires" are suborbital spines. When we find in Filhol's description of *Hippolyte spinifrons* the following sentence: "Elle figurait, sans indication de son habitat en Nouvelle-Zélande, dans les collections du Museum de Paris. Le développement des épines sus-orbitaires permet de la reconnaître à première vue", we may take it for certain that Filhol has seen the typespecimen of H. Milne Edwards, and that in that typespecimen the supraorbital spines are present. Thus the identity of *Hippolyte spinifrons* and *Alope palpalis* becomes a certainty and the name *palpalis* must be changed into *spinifrons*, the name of the present species becoming thereby *Alope spinifrons* (H. Milne Edwards).

The specimen described by Chilton (1911) as *Merhippolyte spinifrons* belongs to *Lysmata trisetacea* (Hell.).

Distribution. This litoral species is recorded only from the coasts of New Zealand and the neighbouring islands. The records of this species from Australia all refer to *Alope orientalis*. The records in literature are: New Zealand (H. Milne Edwards, 1837 b; White, 1847 a, b; 1848; Miers, 1874, 1876; Filhol, 1885; Sharp, 1893; Hutton, 1904; Kemp, 1914), Lyall's Bay near Wellington (Filhol, 1886), Cook Strait (Filhol, 1886), French Pass, northpoint of South Island (Lenz, 1901), Cape Campbell (Thomson, 1903), Sumner (Thomson, 1903), Moeraki (Thomson, 1903), Otago (Filhol, 1886; Thomson, 1903, 1913), Stewart Island (Thomson, 1903), Kermadec Islands (Chilton, 1911), Te One and Red Bluff, Chatham Islands (Lenz, 1901).

Spirontocaris Bate, 1888

Most modern Westeuropean and American authors as Calman, Kemp, Rathbun, Schmitt, a.o., consider species, which are brought by Russian authors as Brashnikov, Alpatow, Derjugin, Kobjakova and Makarov to the genera *Hetairus, Spirontocaris* s.s., *Eualus, Birulia* and *Spirontocarella* as belonging to one large genus *Spirontocaris* s.l. After examination of the characters of the different species of the group I cannot agree with their opinion and am inclined to follow, at least partly, the division adopted by the Russian authors. The two genera *Lebbeus* (= *Hetairus*) and *Spirontocaris* s.s. for instance not only may be separated by the number of supraorbital spines, but also by the character of the presence or absence of an exopod at the third maxillipede; this exopod is namely always present in the genus *Spirontocaris* and invariably lacks in adult specimens of the genus *Lebbeus*. The best treatise on the division of *Spirontocaris* s.l. is that of Brashnikov (1907), it is therefore to be regretted that this paper is written entirely in Russian. I am much indebted to Miss W. Huisman, who translated the introductory part to the family *Hippolytidae* in Brashnikov's paper for me. The main differences between the two genera *Spirontocaris* s.s. and *Lebbeus* as given by Brashnikov are already pointed out above; further differences are: the presence of spines at the anterior margin of the basal segment of the antennular peduncle in *Lebbeus* and the large number (4 or more) of setose spines at the posterior margin of the telson in the same genus (in the other genera belonging to *Spirontocaris* s.l. the number of setose spines is constantly two). The genus *Birulia* too can be sharply separated from the other genera. The chief difficulty is offered by the remaining species, namely those without supraorbital spines. Brashnikov divides them into two genera: *Eualus* Thallwitz and *Spirontocarella* nov. *Spirontocarella* differs from *Eualus* in following points:

1. Rostrum with a well developed dorsal blade (this blade in *Eualus* is strongly reduced) and provided with numerous very small teeth.

2. Dactyli of the last three pereiopods slender and without posterior spines. In *Eualus* the dactylus is said to be shorter and provided with posterior spines.

In my opinion neither the shape of the rostrum nor that of the dactyli of the last three pereiopods is sufficient for generic distinction; the shape of the rostrum of the Hippolytidae usually is very variable, while there are forms, which in their dactyli have intermediate characters, e.g., in *Eualus biunguis* (Rathbun), which has the dactylus slender and "the proximal half of their concave margin is furnished with 5 or 6 spinules so closely appressed that to the naked eye the dactylus appears unarmed" (Rathbun, 1904, p. 98). In my opinion therefore the generic name *Spirontocarella* must be considered as a synonym of *Eualus*. As the presence or absence of an exopod on the third maxillipede in the genera *Spirontocaris* and *Lebbeus* is such a distinct character for the separation of these two genera, I think it very probable that this character too is of generic importance for the splitting of *Eualus* s.l., a genus which is so closely related to them. The name *Eualus* s.s. must be retained for the group with an exopod on the third maxillipede as the typespecies of that genus, *Eualus obses* Thallw. (= *E. gaimardii*) is provided with that exopod. The other group must receive the name *Heptacarpus* Holmes, the type of which is *H. palpator* (Owen), a species missing the exopod. According to Brashnikov (1907) this division is artificial as some species of *Eualus* show such a large resemblance to species of *Heptacarpus*. As example he mentions his *Eualus*

iddendorffi and *Heptacarpus flexus*, which should agree in every respect, but in the presence of ıe exopod; now I do not agree with him in this point as *E. middendorffi* differs from *H. flexus* ı the presence of longitudinal carinae on the third, fourth and fifth abdominal segments; these ırinae, which run in the median of the segments, end in a distinct spine. In *H. flexus* the abdominal :gments are rounded dorsally; in my opinion the resemblance between *E. middendorffi* and *E. arbatus* is more striking, as *E. barbatus* shows the same carinae as *E. middendorffi*.

Hoek (1887) in a short note mentions a parasite, which was situated on the ventral side f the abdomen of a specimen of *Sowerbyus spinus* captured by the Challenger Expedition. In the ıme note the resemblance between this parasite and a species of *Sylon*, parasiting on "*Hippolyte*" *usiola* was pointed out. Hoek at that time gave no further data about the genus *Sowerbyus*, so ıat the name *Sowerbyus*, which has not been used before by any author, must be considered a nomen udum. In 1888 Hoek published a description of *Sylon challengeri*, a new Rhizocephalan parasite f *Spirontocaris spinus* collected by the Challenger Expedition. It is obvious that *Sylon challengeri* s the same animal as that mentioned by Hoek in 1887 and that *Sowerbyus spinus* is nothing else s *Spirontocaris spinus*. The name *Sowerbyus* Hoek (1887) becomes therefore a synonym of *'pirontocaris* Bate (1888), but it does not invalidate the latter name as it was published as a ıomen nudum. Probably the name *Sowerbyus* is a manuscript name of Bate, which he afterwards hanged in *Spirontocaris*.

The species of *Spirontocaris* s.s. may be separated as follows:

1.	Carapace with 3 or 4 supraorbital spines	2
	Carapace with 2 supraorbital spines	3
2.	Lateral margins of abdominal pleurae entire	*prionota*
	Lateral margins of abdominal pleurae pectinate	*pectinifera*
3.	Pleurae of abdominal segments 1 and 2 rounded	4
	Pleurae of abdominal segments 1 and 2 acute	*lamellicornis*
4.	Epipods on first pereiopod only	*sica*
	Epipods at least on first and second pereiopods	5
5.	Epipods on first and second pereiopods	6
	Epipods on first, second and third pereiopods	7
6.	Rostrum longer than carapace, ending in a slender spine	*holmesi*
	Rostrum shorter than carapace, more or less truncate	*snyderi*
7.	Dorsal teeth on carapace not reaching posterior third part of it	*dalli, mororani, ochotensis, onagawaensis, phippsii*
	Dorsal teeth on carapace reaching posterior third of it	8
8.	Dorsal teeth on carapace extending to posterior margin. Third abdominal segment produced posteriorly into a spiniform process	*arcuata, brevidigitata, truncata, spinus*
	Dorsal teeth of carapace ending at a considerable distance from posterior margin. Third abdominal segment not distinctly produced posteriorly	*lilljeborgii, murdochi*

The differences between *S. dalli, mororani, ochotensis, onagawaensis* and *phippsii* are probably based on variable characters and are so slight, that it may be possible that some or all of them form one large variable species. About this question one can only decide after examination of abundant material. The same is the case with the groups formed by *S. arcuata, brevidigitata, truncata* and *spinus* and that formed by *lilljeborgi* and *murdochi.*

Krøyer (1841) described two species: *Hippolyte turgida* and *Hippolyte Phippsii,* which as Goës (1864) pointed out only are the male and female of one species. Though *Hippolyte turgida* was described before *H. phippsii* in Krøyer's article, the name *phippsii* must be used for the present species as it is used by the first reviser, viz., Goës, who pointed to the identity of the two species (vid. article 28 of the International Rules of Zoological Nomenclature).

Williamson (1915) gave a list of many northern species of Hippolytidae, which he for the larger part placed in the genus *Hippolyte*; so all species of *Spirontocaris, Lebbeus, Eualus* and *Heptacarpus* are considered by him to belong to *Hippolyte.* Thus *Spirontocaris bispinosa* Holmes is named by Williamson *Hippolyte bispinosa;* this name however is preoccupied by *Hippolyte bispinosa* De Haan (1841). According to article 35 of the International Rules of Zoological Nomenclature the name *bispinosa* therefore can no longer be used for Holmes's species. A new name is needed here, for which I propose the name *Spirontocaris holmesi* nom. nov.

Lebbeus White, 1847 a

The species of this genus may be divided into three groups namely:

a. with an epipod only on the first pereiopod (one species: *L. vicinus)*
b. with epipods on the first and second pereiopods (*L. brandtii, grandimanus, polaris, unalaskensis)*
c. with epipods on the first three pereiopods (*L. groenlandicus, indicus, microceros, profundus, schrenckii, washingtonianus* and the two forms described as *zebra*).

Not inserted in these groups are *L. lagunae* and *L. compressus,* of which species the number and arrangement of the epipods is unknown.

White (1847 a) published the name *Lebbeus orthorhynchus,* a manuscript name of Leach, as a synonym of *Hippolyte polaris,* together with references to older descriptions of the species. According to Opinion 4 of the International Commission on Zoological Nomenclature, manuscript names published before January 1, 1931 by an author, who has applied the principles of binary nomenclature, are to be considered valid, when they are accompanied by an indication, or a definition or a description, even when they are not accepted by the author responsible for their publication. In the present case all these conditions are fulfilled. The name *Lebbeus orthorhynchus* namely is published by White, who applies strictly the rules of binary nomenclature and the name is accompanied by indications, viz. the references to the descriptions of Ross, Owen and H. Milne Edwards of *Hippolyte polaris* and to Sabine's description and figure of *Alpheus polaris.* The name *Lebbeus orthorhynchus* White (1847) is to be considered as valid. The generic name *Lebbeus* is the first used for the present genus, the second being *Hetairus* Bate (1888) of which also the species *polaris* is the type. The use of the name *Lebbeus* instead of *Hetairus* will not cause a large confusion as the name *Hetairus* up to now also is very little used, only seven of the fifteen species contained in the present genus are mentioned in the literature under the generic name *Hetairus* and then only once or twice.

Astacus varius Fabricius (1781) probably is identical with *L. polaris*. Fabricius (1793, . 484) gives the following short description: "Antennae anticae corpore longiores, rufae maculis uatuor albis, posticae breves. Thorax cylindricus, laevis margine supra oculos dente valido, acuto. ostrum porrectum, adscendens, supra infraque serratum. Abdomen cinereum fasciis plurimis, bliquis, rufis. Cauda foliolis quinque: intermedio subulato, acuto. Pedes secundi paris filiformes, eliquis longiores." As locality he gives: "Habitat in Oceano Norwagico". O. F. Müller (1806) n his Zoologia Danica vol. 4, p. 15 gives a more accurate locality in which Fabricius's specimen as captured, namely Valderhaug (between Bergen and Trondheim). Fabricius's species esembles *L. polaris* in all essential characters, e.g., the strong supraorbital spines, the form of the ostrum, the slender second pereiopods and even in the colourpattern (cf. the description and figure f Leim, 1921, p. 139, pl. 5 fig. 12). Moreover *L. polaris* is rather common in the region from where *Astacus varius* is reported by Fabricius. The specimen referred with some doubt to *Astacus arius* by O. F. Müller, in all probability too belongs to *Lebbeus polaris*. The changing of the ame *polaris* into *varius*, even if we with certainty may accept the identity of the two species, will ause an enormous confusion in carcinological literature as the name *polaris* is acquainted to every arcinologist and the name *varius* is, as far as I know, used only by Fabricius and Müller. It is herefore very desirable that the name *Lebbeus polaris* should be officially recognized against *Astacus varius*.

L. unalaskensis was separated by Rathbun (1904) from *L. polaris* by the longer rostrum, which in the former species is longer, in the latter is shorter than the carapace; this character is not constant. Brashnikov (1907 tab. on p. 151) has shown that in *L. polaris* the rostrum sometimes s shorter, sometimes is longer than the carapace. Unless other differences are found, *L. unalaskensis* must be considered as a synonym of *L. polaris*.

Hippolyte mysis Birula (1898) in my opinion is a postlarval stage of *L. polaris*, as it is only 5 mm long; the presence of an exopod on the third maxillipede and the short rostrum may be uvenile characters (compare Kemp's, 1916, p. 403, description of a postlarval stage of *Hippolysmata ensirostris* and that of *Merguia oligodon* in the present paper, p. 77); it is strange however, that he epipod on the second pereiopod is absent. Dons (1915) erects for Birula's species a new genus, *Birulaecaris*, with as main character the supposed 5-articulate carpus of the second pereiopod; Birula (1898) in his description, however, gives this number of carpal joints with some doubt: 'Pedum II carpus segmentis quinque (?)", so that this character is of very little value.

Hippolyte incerta Buchholz (1874) is considered by Hansen (1908) and Stephensen (1913) to be identical with *L. polaris*. The only difference between the two species is that in *H. incerta* an exopod is present on the third maxillipede, which is missing in *L. polaris* (Hansen, 1908, p. 63 footnote, states incorrectly that *H. incerta* differs from *L. polaris* by the fact that "an epipodite only occurs on the first and second pars of thoracic legs", which, however, also is the case in *L. polaris*). Perhaps the type (and only known specimen) of *H. incerta* is a juvenile specimen ike *H. mysis* Birula; Buchholz does not give any measurement of the specimen.

Another species, which must be considered as identical with *L. polaris* is *Hippolyte projecta* Bate, 1888, which was described after a damaged specimen (the rostrum is broken and the second pereiopod is missing), which in all characters that remain agrees with *L. polaris;* the specimen described by Boone (1930) as *Hippolyte projecta* Bate belongs to the species *Spirontocaris lilljeborgii* (Danielss.).

In 1921 Leim described a new species of *Lebbeus* from Nova Scotia and New Brunswick under the name *Spirontocaris zebra.* In 1935 Makarov described a new species of the same genus under the name *Hetairus zebra* from the Bering Sea and Kamchatka. Both species at present should have to bear the same name, viz. *Lebbeus zebra.* I do, however, not propose a new name for Makarov's species, as I think it possible that the two species are identical: they namely not only agree in the colourpattern, from which in both cases their specific name is derived, but also in the number of epipods and in the general shape. The only difference may be found in the shape of the rostrum. A comparison of material of both species is highly desirable, though both are rather extensively described. Makarov's figure, however, is inaccurate in some points; so the carpus is figured as multiarticulate, though in the description it is stated to consist of 7 joints, like in all other species of the genus.

The name *Spirontocaris gibberosa,* which is given by Yokoya (1933) to a new species of the present genus is, preoccupied by the name *Spirontocaris gibberosa,* which was given by Balss (1914 a) to the species at present known as *Saron marmoratus* (Oliv.). For Yokoya's species a new name is needed, for which I propose the name *Lebbeus compressus* nom. nov.

In the indowestpacific material at my disposal one species of this genus is present.

Lebbeus indicus nov. spec. (figs. 1-3)

Siboga Expedition

Station 18, Bali Sea, 7° 28'.2 S, 115° 24'.6 E; depth 1018 m, deepsea trawl; bottom of fine grey mud; March 18, 1899. — 2 specimens 55 and 64 mm.

Rostrum long and slender, curved upward in the anterior part. In one specimen it is broken near the base, in the other only the extreme tip is missing, the remaining part being as long as the carapace. The upper margin is provided with four strong teeth, two of which are placed on the carapace. The lower margin is provided in the anterior half with six smaller teeth. The carapace is provided with a median dorsal carina, which ends at a distance of about 1/3 of the carapace before its posterior margin. The carapace is smooth, arched dorsally, it is provided with one strong supraorbital spine at each side. The anterior margin is produced into a blunt tooth below the orbit; the strong antennal spine is placed slightly below this tooth. The pterygostomial spine is well developed, though not so large as the antennal one.

The abdominal segments are rounded dorsally; the third has the posterior margin triangularly produced in the median. The pleurae of the first four segments are broadly rounded, that of the fifth ends in a posteriorly directed spine. The sixth segment is distinctly longer than the fifth. In both specimens the telson is broken; in the remaining part only one small movable spine is present near each lateral margin.

The eyes are well developed and reach to about the middle of the first segment of the antennular peduncle.

The antennular peduncle fails to reach the end of the scaphocerite. The first segment is longest, it is about twice as long as the second segment; at the upper part of the anterior margin the first segment is provided with two anteriorly directed spines, which are placed close together;

ne same margin bears laterally a blunt process, which overreaches the articulation with the second egment. The stylocerite is very strong and reaches slightly beyond the end of the basal segment of he peduncle, it is oval in shape, with the greatest breadth some distance above the base, and ends n a sharp point, its outer margin is provided with short setae. The second segment of the eduncle is more than twice as long as the last segment and bears a dorsal spine at the outer side f its anterior margin. The third segment is small and provided with 2 dorsal teeth. The inner of he two flagella is slender, the outer short and broad.

The antennal peduncle reaches beyond the middle of the scaphocerite. The scaphocerite is vell developed, but fails to reach the tip of the rostrum; it is narrowest at base and broadens towards he top, which is truncate. The final tooth of the scaphocerite fails to reach the end of the lamella.

Fig. 1. *Lebbeus indicus* nov. spec. × 3.

The mandible (fig. 3) is provided with a distinct incisorprocess and a twojointed palp.

The third maxillipede bears no exopod, but is provided with an epipod; it reaches with almost the half of last joint beyond the scaphocerite. The penultimate joint is about 1/3 of the length of the ultimate. The antepenultimate joint is slightly longer than the ultimate.

The bases of the pereiopods bear no arthrobranchs, the first three pairs are provided with epipods. The first pereiopod is strong and relatively short. The dactylus is distinctly shorter than half of the propodus, it is provided at the top with two black ungues, which enclose one such unguis of the fixed finger. The carpus is slightly shorter than the palm; the merus is of about the same length as the propodus. The second pereiopod is long and slender, it reaches with the entire chela and part of the carpus beyond the end of the scaphocerite; the chela is small, measuring almost ¼ of the length of the carpus. The carpus is divided into seven joints: the proximal joint is slightly longer than the second, the third much longer than the first and the second together, the fourth slightly longer than the first; the fifth and the sixth together are about as long as the fourth, the seventh is as long as the first. The

merus is more than half as long as the carpus. The ischium is slightly shorter than the merus. The third pereiopod has the dactylus about 1/4 of the length of the propodus; the dactylus ends in a strong spine and is provided with smaller spinules at the lower margin. The carpus is about half as long as the propodus. The merus is slightly longer than the propodus and provided at its posterior margin with 5 movable spines in the proximal and one in the distal part. The propodus too bears posterior movable spines. In both specimens the fourth pereiopods are missing. The fifth pereiopod is

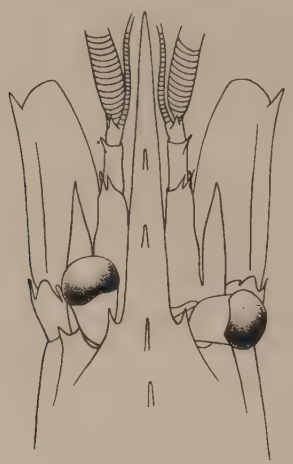

Fig. 2. *Lebbeus indicus* nov. spec. frontal part in dorsal view. × 4.

Fig. 3. *Lebbeus indicus* nov. spec. mandible. × 13.

similarly constructed as the third, being only more slender and having the propodus without and the merus with only two movable posterior spines.

The uropods are normal in shape, rather broad.

The present species belongs to the third group of the genus *Lebbeus,* containing the species with epipods on the first three pairs of pereiopods. It differs from all species belonging to that group by the very long upwardly curved rostrum. With *L. profundus* it is the only known species of this northern genus, which is recorded from tropical regions; both these species were collected in deep sea.

Birulia Brashnikov, 1903

The definition of the present genus as given by Brashnikov (1907) runs as follows:

Body swollen, thickset; abdomen strongly sculptate, short (length of sixth abdominal segment about 42 % of the length of the carapace). Carapace provided with two strongly developed supra-orbital spines, which more or less distinctly cover the eyes; moreover the anterior margin is provided with two branchiostegal spines, one at each side. The dorsal surface of the carapace misses the armament common among the Hippolytidae: a dentate carina, instead of which a peculiar sculptation is present. The rostrum consists only of a midrib, which is thick and cylindrical; the upper as well as the lower limb is entirely missing; the armament of the rostrum is very peculiar: it consists of some small posteriorly curved spinules (almost invisible with the naked eye), which are placed in a longitudinal row on the upper surface. The upper anterior margin of the basal segment of the

ıtennula does not possess any spines. The mandibles are provided with an incisorprocess and a ·ojointed palp. The third maxillipedes are not provided with an exopod, but they bear an epipod. he epipods have the shape of elongate plates with a truncate tip. The armament of the chela of ereiopod I and the dactyli of III—V have the shape common among the subfamily Spirontocarinae. he carpus of the second pereiopod is sevenjointed, the seventh joint is longest. The number of setose ›ines at the apex of the telson is more than 2 (8).

When comparing Yokoya's (1930) description of *Paraspirontocaris* with that of *Birulia,* it evident that the two names are synonyms. The curious small transverse groove in the anterior part the median line of the carapace, which is so distinct in Brashnikov's figure of *Birulia sachanensis,* too is visible, though not so distinct, in Yokoya's figure of *Paraspirontocaris kishinouyei.*

Eualus Thallwitz, 1892

In the synonyms of *Eualus gaimardii* (H. Milne Edwards, 1837 b) are included *Hippolyte ibba* Krøy. and *Hippolyte belcheri* Bell. By some authors *H. belcheri* is considered as a separate ariety of *E. gaimardii.* Careful studies by Birula (1907) and Dons (1915) gave the following esults: in the southern part of its range of distribution both males and females of *E. gaimardii* have ıe third abdominal segment smooth and rounded (the typical *E. gaimardii*); in the northern limit f the range of distribution the males in the posteromedian part of the segment bear a strong ıbercle, which ends in a curved hook, the females only have a blunt, but very distinct tubercle (var. *elcheri*); in the intermediate regions males with a blunt tubercle and females with a smooth egment may be observed (var. *gibba*). These varieties cannot be sharply separated as there occur radual transitions. I therefore agree with Dons in considering these specimens as belonging to ne species, in which two local forms may be observed: forma *gaimardii* (= *typica* Dons) and forma *elcheri.* The recognition of a separate forma *gibba* in my opinion is of no value. We may observe hat going from south to north the gibbosity of the third abdominal segment becomes stronger and hat it is developed firstly and later more strongly in the males.

In 1930 Yokoya gave an extensive description and a figure of a new species belonging to he present genus under the name *Spirontocaris japonica.* Comparing his description with the escription of *Eualus leptognathus* given by Stimpson (1860) and Yu (1935) I could find o difference and therefore consider Yokoya's species as a synonym of *Eualus leptognathus* Stimpson).

Heptacarpus Holmes, 1900

The species named by Rathbun (1904), Schmitt (1921) and other authors *Spirontoaris gracilis* (Stimpson) may not bear that name as *Hippolyte gracilis* Stimpson (1864) is preccupied by *Hippolyte gracilis* Lilljeborg (1850), which is a synonym of *Eualus gaimardii.* Thereore Holmes's name for the species, *Heptacarpus tenuissimus,* must be used.

Hippolyte cristata Stimpson (1860) is invalidated by *Hippolyte cristata* De Haan, 1841. Rathbun (1904) denies this, because De Haan corrected his name *Hippolyte cristata* in an rratum, which according to Rathbun appeared together with his plates bearing the name, which ıad to be changed. This however, holds not true as the plates were published as early as 1841

(vid. Isis, 1845, p. 925) and the erratum in 1849 (vid. Sherborn and Jentink, Proc. zool. Soc. Lond., 1895, p. 149), moreover a name once published cannot be invalidated by making it a synonym of another species. Therefore *H. cristata* Stimpson has to be rejected and a new name is needed, for which I propose the name *Heptacarpus stimpsoni* nom. nov.

In the collections at hand two species of this genus are present.

Heptacarpus geniculatus (Stimpson)

Hippolyte geniculata Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 34.
Hippolyte geniculata Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 503, pl. 37 fig. 3.
Hippolyte geniculata Doflein, 1902, Abh. Bayer. Akad. Wiss., vol. 21, p. 636.
Spirontocaris geniculata Rathbun, 1902 b, Proc. U. S. Nat. Mus., vol. 24, p. 45, fig. 19.
Spirontocaris alcimede De Man, 1906, Ann. Mag. nat. Hist., ser. 7 vol. 17, p. 404.
Spirontocaris alcimede De Man, 1907, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 9, p. 416, pl. 32 figs. 42-46.
Spirontocaris geniculata Yokoya, 1930, Sci. Rep. Tôhoku Imp. Univ., ser. 4 vol. 5, p. 530.
Spirontocaris geniculata Yokoya, 1933, Journ. Coll. Agric. Tokyo, vol. 12, p. 26.
Spirontocaris alcimede Yu, 1935, Chinese Journ. Zool., vol. 1, p. 43.
Eualus geniculatus ? Derjugin & Kobjakova, 1935, Zool. Anz., vol. 112, p. 142.
Spirontocaris geniculata Yokoya, 1939, Sci. Rep. Tôhoku Imp. Univ., ser. 4 vol. 14, p. 270.

Museum Amsterdam

Inland Sea of Japan (cotype of *Spirontocaris alcimede* De Man). — 1 specimen 29 mm.

In the collection of the Zoological Museum at Amsterdam one of the cotypes of *Spirontocaris alcimede* De Man is present. The specimen formed part of the private collection of Dr. J. G. de Man.

De Man (1907) in his description of *Spirontocaris alcimede* states that the third maxillipede bears no exo- or epipod. When examining the type I observed that in reality a small epipod is present on the base of the third maxillipede, in contradistinction to De Man's statement. Comparison of the present specimen with Stimpson's (1860) description of *Hippolyte geniculata* showed that the two species, *Heptacarpus alcimede* and *H. geniculatus*, are identical, a fact already supposed by Yokoya (1930), who stated as only difference between the two species the presence of an epipod on the third maxillipede in *H. geniculatus* and its absence in *H. alcimede;* he also supposed the probability that De Man overlooked the epipod.

Vertical distribution. The species is recorded from depths varying between 3.5 and 145 m.

Horizontal distribution. The species is confined to Japanese and Chinese waters. Records in literature are: Nemuro, Yezo (Doflein, 1902), Mororan, Yezo (Rathbun, 1902 b), Hakodate, Yezo (Stimpson, 1860), various localities in Mutsu Bay (Yokoya, 1930), Iigohama, Takasiro, Onmae Bay and Onagawa Harbour, N.E. Honshu (Yokoya, 1939), Inland Sea of Japan (De Man, 1906, 1907), North of Oga (Yokoya, 1933), Tokyo Bay (Ortmann, 1890), Yokohama (Doflein, 1902), Tanagawa (Ortmann, 1890), Miura (Rathbun, 1902 b), Yangmatao, Chefoo and Kontongtao, China (Yu, 1935).

Heptacarpus pandaloides (Stimpson)

Hippolyte pandaloides Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 34.
Hippolyte pandaloides Doflein, 1902, Abh. Bayer. Akad. Wiss., vol. 21, p. 637.

Spirontocaris pandaloides De Man, 1907, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 9, p. 418, pl. 32 figs. 47, 48.
Spirontocaris pandaloides Balss, 1914 a, Abh. Bayer. Akad. Wiss., suppl. vol. 2 pt. 10, p. 44.
Spirontocaris pandaloides Kemp, 1914, Rec. Indian Mus., vol. 10, p. 93.
Spirontocaris pandaloides Kemp, 1916, Rec. Indian Mus., vol. 12, p. 386.
Spirontocaris pandaloides Parisi, 1919, Atti Soc. Ital. Sci. nat., vol. 58, p. 74.
Spirontocaris pandaloides Yokoya, 1930, Sci. Rep. Tôhoku Imp. Univ., ser. 4 vol. 5, p. 530.
Spirontocaris pandaloides Yu, 1935, Chinese Journ. Zool., vol. 1, 44.
Spirontocaris pandaloides Yokoya, 1939, Sci. Rep. Tôhoku Imp. Univ., ser. 4 vol. 14, p. 270.

Museum Amsterdam

Inland Sea of Japan. — 1 specimen 51 mm.

The present specimen was already described and figured by De Man (1907). Stimpson 1860) mentions that the third maxillipede bears an epipod; this epipod, though very small, is also present in the specimen examined by me.

Vertical distribution. The species is recorded from depths ranging between 3.5 and 30 m.

Horizontal distribution. The species for a long time only was known from Japanese and Chinese waters, in 1914 it was recorded by Kemp from the Indian coast. Records in literature are: Karachi, mouth of river Indus (Kemp, 1914), Hakodate, Yezo (Stimpson, 1860; Doflein, 1902), various localities in Mutsu Bay (Yokoya, 1930), Inland Sea of Japan (De Man, 1907), Aigohama, Takasiro, Onmae Bay, and Onagawa Harbour, N.E. Honshu (Yokoya, 1939), Jenoshima (Parisi, 1919), Yokohama (Doflein, 1902; Kemp, 1914; Parisi, 1919), Misaki (Balss, 1914; Kemp, 1916), Kiaochow Bay, China (Yu, 1935).

Chorismus, Bate 1888

Hippolyte Romanchei A. Milne Edwards (1891) from the Magellan region, undoubtedly belongs to the present genus and in all probability is identical with *Chorismus antarcticus*.

Thoralus nov. gen.

Definition: *Thoralus* is a small Hippolytid prawn. The body is rather clumsy and more or less compressed. The rostrum is short and serrate. The carapace is smooth, it is provided with an antennal spine only, supraorbital and branchiostegal spines are lacking.

The abdomen is smooth. The pleurae of the first three abdominal segments are rounded, those of the fourth and fifth segments end in a minute acute point. The sixth segment is elongate. The telson is elongate triangular and bears several dorsal pairs of spines; the posterior margin is provided with 3 pairs of spines.

The eyes are large and well pigmented.

The antennular peduncle consists of three joints. The stylocerite is broad and pointed, it reaches beyond the first peduncular segment. The second and third segments are much shorter than the first. Small external anterolateral spines are present in the first and second segment of the antennular peduncle. The third segment bears an upper and a lower spine at the anterior margin, no movable plate is present there. The upper antennular flagellum is short and has the basal segments much broadened, the lower flagellum is slender throughout its length.

The scaphocerite is well developed. It reaches far beyond the antennular peduncle. The outer margin ends in a distinct final tooth, which is outreached by the lamella.

The mandible consists of an incisor process and a molar process, which both are well developed. The incisor process ends in a row of teeth. The molar process is provided with blunt knobs and ridges in the distal part. No mandibular palp is present. The maxillula has the upper lacinia very large and broad, the inner lacinia is slender, the palp is simple. The maxilla has the scaphognathite rather well developed, a distinct palp is present, the upper lacinia is well developed and is distinctly cleft, the lower lacinia is reduced. All maxillipedes are provided with exopods. The first maxillipede has the two endites separated by a distinct notch, the palp is well developed, the exopod is long and bears a small but distinct caridean lobe at the base, the epipod is large and bilobed. The second maxillipede is normal in shape, except the exopod it also bears a distinct epipod which is provided with a small podobranch. The third maxillipede is slender, the ultimate joint is much longer than the penultimate; some strong spines are present at the apex of the last joint. The branchial formula runs as follows:

	maxillipedes			pereiopods				
	I	II	III	I	II	III	IV	V
pleurobranchs	—	—	—	+	+	+	+	+
arthrobranchs	—	—	—	—	—	—	—	—
podobranchs	—	+	—	—	—	—	—	—
epipods	+	+	+	+	+	+	—	—
exopods	+	+	+	—	—	—	—	—

The first pereiopods are equal, they are robust and short. The palm is longer than the fingers. The carpus is shorter than the chela. The second pereiopods are longer and slenderer than the first. The carpus is subdivided into 6 (or 7) joints. The last three pereiopods are slender. The dactylus is short, it ends in a double claw, while moreover a row of spines is present on its posterior margin. The propodus bears some posterior spines: In the distal part of the posterior margin of the merus some spinules are present; in the third pereiopod these meral spinules are more numerous than in the fourth or fifth; in the female only some (1-4) rather strong spinules are present, while in the male these spinules are more slender and more numerous (8-17) and are comb-like arranged.

The first pleopod of the male has the endopod ending in a slender process, which bears some small hooks at the inner side of the apex. The endopod of the second pleopod of the male has the appendix masculina very short and truncated, the appendix interna is much longer than the appendix masculina. The other pleopods are normal in shape.

The uropods are quite normal, they reach slightly beyond the telson.

Typespecies: *Hippolyte Cranchii* Leach, 1817.

In 1936 Lebour showed that the specimens up to that time considered to belong to *Spirontocaris cranchii* (Leach) consist of two well defined species, which differ in the following characters: one of the species has the mandible provided with a twojointed palp, and has the carpus of the second pereiopod seven-articulate, the other misses the mandibular palp and has the carpus of

ıe second pereiopod sixarticulate. It could be proven that the typespecimen of L e a c h's *Hippolyte ranchii* belongs to the second form, the first form was at that moment not yet described as new and ıerefore was given by L e b o u r the name *Spirontocaris occulta.* Nothwithstanding the differences ı the structure of the mandible L e b o u r kept *Hippolyte cranchii* in the genus *Spirontocaris.* One ear previously a Spanish author, Z a r i q u i e y C e n a r r o (1935 b), when working on Hippo-rtidae from the Catalonian coast, described from that region two species of the genus *Thor* and vo of the genus *Spirontocaris,* viz., *Thor bunseni, T. sollaudi, Spirontocaris cranchii,* and *S. pusiola.* Ie separates these genera on the character of the presence or absence of a mandibular palp, so ıat, when comparing his descriptions with those in the paper of L e b o u r it becomes obvious that is *Thor bunseni* is identical with *Spirontocaris cranchii* of L e b o u r and his *Spirontocaris cranchii* identical with L e b o u r's new *Spirontocaris occulta.* I entirely agree with Z a r i q u i e y in con-dering the two species as belonging to two different genera, but I think L e a c h's *Hippolyte ranchii* generically distinct from *Thor,* and therefore place it in a new genus, which I should like ɔ name *Thoralus,* to indicate its close relation with the genera *Thor* and *Eualus.* The species named y Z a r i q u i e y *Thor bunseni* and by L e b o u r *Spirontocaris cranchii* thus must bear the name *Thoralus cranchii* (Leach) and *Spirontocaris cranchii* of Z a r i q u i e y must bear the name *Eualus ccultus* (Lebour), as in my opinion the genus *Spirontocaris* s.l. must be divided in 5 separate genera vid. p. 36) one of which is the genus *Eualus* Thallw.

The second species of *Thoralus* mentioned by Z a r i q u i e y is his new species *Thor sollaudi,* vhich should differ from *Thoralus cranchii* in the following points:

. The rostrum does not reach beyond the first antennular segment.
. The carpus of the second pereiopod is sevenarticulate (not sixarticulate).
. The meri of the last three pereiopods are provided with many more posterior spinules.

The last character is not specific, but only secondary sexual, which is distinctly shown, vhen we compare Z a r i q u i e y's figures of the meri of his two species, with the meri figured by L e b o u r for the male and female of *Thoralus cranchii* and *Eualus occultus.* Z a r i q u i e y's specimen of *Thor sollaudi* is a male, that of his *Thor bunseni* is a female. So the first and second character remain, but it is doubtful whether these are sufficient for the distinction of two species, because the rostrum always provides a very variable character and the difference in the number of carpal joints is very small. The last character perhaps is constant, as L e b o u r (1936) remarks that n her material *Eualus occultus* constantly had the carpus 7-articulate, while in *Thoralus cranchii* t invariably was 6-jointed, which also is shown in material examined by me. Examination of more material perhaps will show the correct affinities of *Thor sollaudi.*

Thor Kingsley, 1878 b

This genus at present consists of 5 species, four of which are represented in the collections at hand. *Thor floridanus,* the type of the genus, is generally considered to be identical with *Thor paschalis,* but this is not correct: *Thor floridanus* is a good species. A key to the species of *Thor* is given here:

1. Supraorbital spine well developed or vestigial 2
   Supraorbital spine entirely absent 3

2. Supraorbital spine vestigial. Merus of fifth pereiopod with a distinct anteroventral spine . . . . . *floridanus*
   Supraorbital spine well developed. Merus of fifth pereiopod without anteroventral spine . . . . . *maldivensis*
3. Stylocerite without a spinule at basal part of outer margin . . . . . *paschalis*
   Stylocerite with a small erect spinule at basal part of outer margin 4
4. Telson with three or four pairs of dorsal spinules. Merus of fifth pereiopod without spine at anteroventral angle . . . . . *amboinensis*
   Telson with only one very small pair of dorsal spinules. Merus of fifth pereiopod with a spine at anteroventral angle . . . . . *intermedius*

Thor maldivensis Borradaile

Thor maldivensis Borradaile, 1915, Ann. Mag. nat. Hist., ser. 8 vol. 15, p. 208.
Thor maldivensis Kemp, 1916, Rec. Indian Mus., vol. 12, p. 391.
Thor maldivensis Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 401, pl. 58 fig. 6.
Thor maldivensis Edmondson, 1925, Bull. Bishop Mus. Honolulu, vol. 27, p. 6.
Thor maldivensis Pesta, 1933, Zool. Anz., vol. 104, p. 279.
Thor spinosus Boone, 1935, Bull. Vanderbilt mar. Mus., vol. 6, p. 192, pl. 52.

Siboga Expedition

Station 115, eastside of Pajoenga Island, Koeandang Bay, N. Celebes; reef; July 9-11, 1899. — 2 ovigerous females 10 and 12 mm.

Snellius Expedition

Obi latoe; shore and reef; April 27, 1930. — 2 specimens (1 ovigerous female) 8 and 11 mm.

Museum Leiden

Locality unknown. — 3 specimens (1 ovigerous female) 10-11 mm.

The species differs from all other species of the genus *Thor* by the possession of a strong supraorbital spine at each side of the carapace. The specimens examined by Borradaile (1917) and Kemp (1916) have the upper margin of the rostrum provided with one tooth only; this character was considered by Kemp to be of specific value; in my material specimens with 1, 2, 3, 4, and even with 5 dorsal teeth are present. Therefore *Thor spinosus* Boone cannot be regarded as specifically different from *T. maldivensis*, as it, as far as I can conclude, only differs from that species by having more dorsal teeth (3) on the rostrum. Like in *Thor amboinensis* the stylocerite is provided with a small erect spinule at the basal part of the outer margin. Borradaile and Boone state that the carpus of the second leg is five-articulate, according to Kemp it is six-articulate. In my specimens the carpus is six-articulate, but the separation between the proximal joints often is very indistinct.

Vertical distribution. A litoral species, which generally is found on coralreefs.

Horizontal distribution. The species is known from several localities within the indowestpacific area. Records in literature are: Salomon Island, Chagos Archipelago (Borradaile, 1915,

7), Malé Atoll, Maldive Archipelago (Borradaile, 1915, 1917), Minikoi (Borradaile, 5, 1917), Andaman Islands (Kemp, 1916), Bali (Boone, 1935), Wake Island (Edmond-n, 1925), Hawaiian Archipelago (Pesta, 1933), Waikiki, Oahu (Edmondson, 1925).

Thor paschalis (Heller)

Hippolyte paschalis Heller, 1862 a, S. B. Akad. Wiss. Wien, vol. 44 pt. 1, p. 276, pl. 3 fig. 24.
non *Hippolyte paschalis* ? De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 534.
Hippolyte paschalis Lenz, 1905, Abh. Senckenb. naturf. Ges., vol. 27, p. 382.
Paschocaris paschalis Nobili, 1905 c, Bull. Mus. Hist. nat. Paris, vol. 11, p. 395.
Paschocaris paschalis Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 38, pl. 3 fig. 1.
Thor paschalis Kemp, 1914, Rec. Indian Mus., vol. 10, p. 94, pl. 1 fig. 6-10.
Tor paschalis Balss, 1915, Denkschr. Akad. Wiss. Wien, vol. 91 suppl., p. 25.
Thor paschalis Kemp, 1916, Rec. Indian Mus., vol. 12, p. 387.
Thor paschalis Tattersall, 1921, Journ. Linn. Soc. Lond. Zool., vol. 34, p. 382.
non *Thor paschalis* Schmitt, 1924 a, Bijdr. Dierk., vol. 23, p. 70.
Thor paschalis Kemp, 1925, Rec. Indian Mus., vol. 27, p. 330.
non *Thor paschalis* Schmitt, 1935, Sci. Surv. Porto Rico Virgin Isl., vol. 15, p. 154.
Thor paschalis Schmitt, 1935, Sci. Surv. Porto Rico Virgin Isl., vol. 15, textfig. 21.
non *Thor paschalis* Schmitt, 1936, Zool. Jb. Syst., vol. 67, p. 370.
non *Thor paschalis* Schmitt, 1939, Smithson. misc. Coll., vol. 98 pt. 6, p. 28.

Siboga Expedition

Station 93, Sanguisiapo Island, Tawitawi Group, Sulu Archipelago; 12 m; June 24 and 25, 1899. — 2 specimens 8 and 9 mm.
Station 273, anchorage off Djedan Island, eastcoast of Aroe Islands; pearl banks, 13 m; December 23-26, 1899. — 1 specimen 7 mm.

Snellius Expedition

Sipankot near Sibutu, Sulu Archipelago; shore, between seagrass; September 11, 1929. — 1 specimen 8 mm.
Ternate; pier; divinghood, ± 4 m; April 1, 1930. — 1 specimen 7 mm.
Ambon; pier, 0-2 m; on Crinoids; May 6, 1930. — 1 specimen 8 mm.

Kemp (1914) stated that the american *Thor floridanus,* from which species he examined veral specimens, is identical with the indowestpacific *Thor paschalis.* In a later paper Kemp ew attention to the fact that in the indowestpacific region there occurs a second species, called him *Thor discosomatis,* which differs from *Thor paschalis* in the presence of a small erect inule at the base of the stylocerite; this spinule is entirely absent in *T. paschalis.* When comparing y specimens from the present genus collected in the indowestpacific region with some specimens the same genus from Curaçao, which were identified by Schmitt (1924 a) as *Thor paschalis* id by Rathbun (1919) as *Thor floridanus,* I found the small erect spinule (which is absent in *paschalis)* present in all the American specimens examined. From this fact we may conclude that *paschalis* and *T. floridanus* are specifically distinct; the possible identity between *T. floridanus* id the other indowestpacific species which have a similar erect process at the base of the stylocerite mains. All the American material examined by me, totalling 31 specimens, have the carapace ovided with a vestige of a supraorbital spine at each side, being in this respect intermediate

between *T. amboinensis* (= *T. discosomatis*) and *T. maldivensis* from the indowestpacific region Furthermore *T. floridanus* differs from both these species by having the merus of the fifth pereiopod provided with a distinct anteroventral spine, which is absent in *T. amboinensis* as well as in *T. maldivensis*. From the fourth indowestpacific species *T. intermedius*, the american species differs in the spinulation of the dorsal surface of the telson and in the stronger first pereiopod. *T. floridanus* therefore must be considered a good species. It is the type of the genus.

The specimens named by Schmitt (1924 a, 1935, 1936 and 1939) *Thor paschalis* under influence of Kemp's (1914) statement, do not belong to the present species but to *T. floridanus*. Probably some of the specimens recorded by older authors as *T. paschalis* from the indowestpacific region belong to one of the species mentioned below.

Vertical distribution. The species is a litoral form.

Horizontal distribution. The species is known from the indowestpacific region from the Red Sea to the Malay Archipelago. Records in literature are: Red Sea (Heller, '1862 a), Tor, Sinai Peninsula (Balss, 1915; Kemp, 1925), Ras Abu Somer (Balss, 1915), Yenbo (Balss, 1915), Raveiya (Balss, 1915), El Lith (Balss, 1915), Khor Dongonab (Tattersall, 1921), Jibuti (Nobili, 1906 b), Zanzibar (Lenz, 1905), Maldive Archipelago (Kemp, 1925); Kilakarai and Pamban, S. India (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1916), Tanah merah besar Singapore (Kemp, 1916). The present specimens provide the easternmost localities from which the species is known.

Thor amboinensis (De Man)

Hippolyte paschalis ? De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 534.
Hippolyte amboinensis De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 535.
Thor discosomatis Kemp, 1916, Rec. Indian Mus., vol. 12, p. 388, textfig. 1, pl. 36 fig. 1.
Thor discosomatis Kemp, 1925, Rec. Indian Mus., vol. 27, p. 330.

Siboga Expedition

Station 220, anchorage off Pasirpandjang, westcoast of Binongko; vertical net; 10-200 m; November 1-3, 1899. — 1 ovigerous female 12 mm.

Station 261, Elat, westcoast of Groot Kai Island; reef; December 16-18, 1899. — 3 specimens (1 ovigerous female) 14-21 mm.

Hansisi, Semaoe Island (Station 60, April 27 and 28, 1899 or Station 303, February 2-5, 1900); reef. — 6 specimens (included ovigerous females) 12-15 mm.

Snellius Expedition

Ternate; pier; divinghood, ± 4 m; April 1, 1930. — 1 specimen 9 mm.

Beo, Karakelong, Talaud Islands; June 14-21, 1930. — 1 ovigerous female 14 mm.

Museum Leiden

Locality unknown. — 1 specimen 9 mm.

De Man (1888 a) described a specimen of the present genus from Amboina. He referred it with some doubt to *Thor paschalis* and gave the following differences from Heller's description of the typical *Thor paschalis*:

Dorsal margin of rostrum with only three teeth.
Rostrum pointed, not bifid.
Third segment of antennular peduncle without outer spine.
Stylocerite reaches beyond second segment of antennular peduncle, sometimes even beyond third egment.

When describing his *Thor discosomatis,* Kemp (1916) gave the same differences between new species and *T. paschalis,* except for point 3, which seems to be no difference at all, since *T. paschalis* the third antennular segment also bears no outer spine, but only is provided with rge dorsal plate. The most important character indicated by K e m p: the presence of a small erect nule at the basal part of the outer margin of the stylocerite in *T. discosomatis,* is not mentioned D e M a n in his description. Nevertheless I regard the other characters given by D e M a n as ficient to identify his species, which he gave the preliminary name of *Hippolyte amboinensis,* as *or discosomatis* Kemp. The specific name *amboinensis* has priority over *discosomatis,* so that the ne of the species must be *Thor amboinensis* (De Man).

In my material the present species is rather abundant; the specimens generally are larger n those of *T. paschalis.* All specimens have the tip of the rostrum acute, except one, in which ery minute spinule near the tip gives it a bifid appearance. In all specimens of *T. paschalis* the is distinctly bifid.

Vertical distribution. The species is a superficial form, which lives on coralreefs; according K e m p (1916) it is associated with Actinians of the genus *Discosoma.*

Horizontal distribution. The species is known from the Bay of Bengal and from the Malay chipelago. Records in literature are: Port Blair, Andaman Islands (K e m p, 1916, 1925), ncowry Island, Nicobar Islands (K e m p, 1925), Octavia Bay, Nancowry Harbour, Nicobar ands (K e m p, 1925), Ambon (D e M a n, 1888 a).

Thor intermedius nov. spec. (figs. 4-6)

Snellius Expedition

Sissie near Misool; shore and reef; October 6, 1929. — 1 specimen 10 mm.

The rostrum reaches distinctly beyond the line that separates the ocular peduncle from the rnea, it almost reaches the end of the first segment of the antennular peduncle. The tip is stinctly bifid. The upper margin is armed with three teeth, the first of which stands on the carapace, ghtly behind the orbit. The lower margin bears no teeth. The carapace is smooth, no supraorbital ine is present. The lower angle of the orbit is rounded; a well developed antennal spine is placed low it. The anterolateral angle of the carapace is broadly rounded.

The abdominal segments are smooth, the pleurae of the first three segments are rounded, ose of the fourth and fifth segment end in a small posteriorly directed spine. The sixth segment about 1½ times as long as the fifth.

The telson (fig. 5) is about as long as the sixth segment. It bears in the posterior half of the per surface one pair of very minute spinules, which only may be observed with a strong lens. he posterior margin of the telson bears seven movable spines.

The eyes are large, the cornea is longer and much broader than the stalk.

The antennular peduncle has the basal segment broad; it is longer than the two other segmer together. The stylocerite reaches almost to the end of the second segment of the antennular pedunc it has the same shape as in *T. amboinensis* and also is provided with a small erect spinule at t basal part of the outer margin. The second segment is provided with a spine at the outer angle

Fig. 4. *Thor intermedius* nov. spec. frontal part in lateral view. × 27.

Fig. 5. *Thor intermedius* n spec. telson and uropods dorsal view. × 32.

the anterior margin. The third segment bears the movable plate, which is typical for t species of the present genus. The external antennular flagellum has the basal segments short an thick, and is provided with long hairs. The inner flagellum is slender.

The scaphocerite reaches beyond the antennular peduncle, it is rather narrow, being slight more than twice as long as broad. The outer margin is slightly sinuate. The final tooth reach almost the end of the lamella.

Fig. 6. *Thor intermedius* nov. spec. first pereiopod. × 32.

The third maxillipede does not reach the end of the scaphocerite. The ultimate segment about three times as long as the penultimate. The antepenultimate is shorter than the ultimate, bein about twice as long as the penultimate. The maxillipede bears some spines near the apex and covered with long stiff, it bears a distinct exopod.
covered with long stiff setae, it bears a distinct exopod.

No epipods are present at the bases of the pereiopods. The first pereiopod (fig. 6) ha an entirely different shape from that of the other species of the present genus. The dactylus is abou $^1/_3$ of the length of the propodus, which at its base is broadest and narrows towards the top. Th carpus is distinctly shorter than the slender chela. The merus is somewhat longer than the carpu

he second pereiopod is missing in my specimen. The third pereiopod resembles the figure of e m p (1914, pl. 1 fig. 10) of the third pereiopod of a male specimen of *Thor paschalis,* the merus provided with two movable spines. The fourth and fifth pereiopod too are shaped as in *Thor aschalis,* their merus is provided with a distinct anteroventral spine.

The uropods have the same shape as in the other species of the present genus.

The species agrees with *Thor paschalis* in the shape of the rostrum and by having an antero-ntral spine at the merus of the fifth pereiopod. The form of the stylocerite is like that in *Thor nboinensis.* In the shape of the first pereiopod and that of the telson the present species differs om all other species of *Thor.*

Hippolyte Leach (1815)

It is very difficult to obtain a correct idea of the systematic position of the species contained i the present genus. Most of them are characterized by older authors on the shape of the rostrum, hich is one of the most variable characters, as is already showed by many authors. Another character) which often specific value is attached is the subprehensility of the last three pereiopods. This iaracter, as will be shown below, is secondary sexual (it is characteristic for the males) and there-ore is of no value for specific distinction. A character, which I think to be of great value is the resence or absence of one or more spinules at the anterior margin of the basal segment of the ntennular peduncle, on which character great stress was laid by G u r n e y (1927). It is very probable iat many forms, which till now were considered to be good species, will after thorough examination rove to be identical.

Astacus coerulescens was described by F a b r i c i u s (1775) as follows: "Corpus parvum, moene coeruleum. Thorax oblongus, subcylindricus, laevis, antice ad basin rostri denticulis duobus arvis. Rostrum elongatum, thorace paulo brevius, subulatum, denticulis duobus minutissimis otatum. Antennae anticae longitudine corporis, posticae vix rostro longiores, bifidae, lacinia nteriore ovata, compressa, ciliata. Abdominis primum segmentum maximum. Cauda foliolis quinque, ntermedio emarginato. Brachia brevissima, teretia, chelis minutis. Pedes octo filiformes, teretes." About the locality F a b r i c i u s stated: "Habitat in Pelago inter Tropicos frequens." With the erm "in Pelago" F a b r i c i u s meant on high sea as he uses this term only for species living in *argassum* (cf. *Cancer minutus* (= *Planes minutus* (L.): "Habitat in Pelago" and *Cancer pelagicus* = *Portunus pelagicus* (L.): "Habitat in Pelagi fuco natante").

That *Astacus coerulescens* is a Hippolytid prawn is clearly shown by F a b r i c i u s's statement iat the first cheliped is short and that the four following legs are slender. His description very well its for the species best known under the name *Hippolyte acuminata* Dana, which is found commonly n *Sargassum* in the Atlantic Ocean. The characters, which F a b r i c i u s gives for his species as: he presence of the supraorbital spines, the rostrum, which only bears two teeth, the antennula, vhich bears two short flagella, one of which is broad, compressed and ciliated, all agree closely vith those of D a na's species. F a b r i c i u s states that the first abdominal segment is very large, his of course is an error and must be the second abdominal segment, the first to all probability being verlooked by the Danish author. The second pereiopod, probably by its slender shape, is not ecognized by F a b r i c i u s as a cheliped, but is considered to be a walking leg. As no other species re found on high sea, which agree with F a b r i c i u s's description of *Astacus coerulescens,* we

safely may assume the identity of *Astacus coerulescens* and *Hippolyte acuminata*. Fabricius's name is older than that of Dana, so that the name of the species must be *Hippolyte coerulescens* (Fabricius, 1775). Before the publication of Dana's description of *Hippolyte acuminata* the species is described as new for a second time. In 1801 namely Bosc described and figured a shrimp, named by him *Palaemon pelasgicus*, which was obtained from the high sea on floating weeds. The description is very short and the figure is poor; the most important character mentioned is the shape of the rostrum, which bears on the upper side as well as on the lower margin one tooth. Now this shape of the rostrum is found only in *Hippolyte coerulescens* (Fabr.); all other forms of the Sargassumbiocoenosis have the rostrum entirely different. We therefore must consider Bosc's species identical with that of Fabricius. Another synonym of the present species, not yet recognised by the authors of the papers at my disposal is *Hippolyte tenuirostris* H. Milne Edwards. The French author described this species, which was found together with *Latreutes fucorum* (called *Hippolyte ensiferus* by Milne Edwards) on high sea near the Azores, in his Histoire naturelle des Crustacés vol. 2 in 1837. Dana (1852) thought his *Hippolyte acuminatus* different from Milne Edwards's species on account of the rostral formula (the formula in Dana's specimens was $\frac{1}{1}$, that in Milne Edwards's specimens $\frac{1-2}{2-3}$). As shown by later authors the rostral formula of the present species varies between $\frac{0-2}{1-3}$ (vid. Stebbing, 1914, p. 289 and Verrill, 1922, p. 125) though it usually is $\frac{1}{1}$. As no other Hippolytid prawn except *Latreutes fucorum* is known from the Atlantic *Sargassum*, we safely may identify *H. tenuirostris* H. Milne Edwards with *Hippolyte coerulescens* (Fabr.).

The species described by Bate (1863) as *Caradina tenuirostris* belongs to the present genus and is mentioned by later authors as *Hippolyte tenuirostris* (Bate), but this name is preoccupied by *Hippolyte tenuirostris* H. M. Edw. I propose for Bate's species the name *Hippolyte caradina* nom. nov.

The name *Hippolyte gracilis* (Heller, 1862 b) too is preoccupied. It was used namely as early as 1850 by Lilljeborg for a species, regarded by him to be new, but which afterwards proved to be identical with *Eualus gaimardii*. As *Virbius gracilis* var. *longirostris* Czerniavsky (1868) is the first synonym of Heller's species, I propose to name this species *Hippolyte longirostris* nom. nov.

In 1816 Risso described a new shrimp under the name *Palemon Olivieri*, in 1826 he redescribed it and gave a figure of it under the name *Alpheus Olivieri*. From his descriptions and figure it is clear that his species is identical with *Hippolyte prideauxiana* Leach. Leach's species, however, was described in December 1817, so that Risso's name has priority over that of Leach. In 1815, however, Leach gave a very short description of a species named by him *Hippolyte inermis*, which was characterized by the fact that the rostrum had no teeth and that a supraorbital spine was present on each side: "H. rostro inermi basi utrinque unispinoso". It was collected at the southcoast of Devon and was communicated to Leach with numerous inedited and in 1815 still unstudied species by C. Prideaux and J. Cranch. As *Hippolyte prideauxiana* has the upper margin of the rostrum without teeth and the carapace provided with a supraorbital spine at each side, we may take it for certain that *Hippolyte inermis* is identical with *H. prideauxiana*, because no other British shrimp shows those characters. Leach perhaps does not use this name in his Malacostraca

Podophthalmata Britanniae, as he in that work recognises two species of *Hippolyte* with the upper margin of the rostrum entire, namely *H. Prideauxiana* and *H. Moorii,* which two forms afterwards were again united to one species. As Leach's *Hippolyte inermis* was published one year before Risso's *Palemon Olivieri,* Leach's name has to be used.

Two species of the present genus are present in the collections which are dealt with here.

Hippolyte ventricosa H. Milne Edwards (figs. 7-9)

Hippolyte ventricosus H. Milne Edwards, 1837 b, Hist. nat. Crust., vol. 2, p. 371.
Virbius australiensis Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 35.
Hippolyte orientalis Heller, 1862 a, S. B. Akad. Wiss. Wien, vol. 44 pt. 1, p. 277.
Caradina cincinnuli Bate, 1863, Proc. zool. Soc. Lond., 1863, p. 500, pl. 40 fig. 3.
Virbius Mossambicus Hilgendorf, 1878, Mber. Akad. Wiss. Be lin, 1878, p. 836, pl. 4 fig. 1.
Caridina cincinnuli Haswell, 1882, Catal. Aust. Crust., p. 183.
Virbius australiensis Haswell, 1882, Catal. Aust. Crust., p. 186.
Viribius Australiensis Whitelegge, 1890, Journ. Roy. Soc. New S. Wales, vol. 23, p. 224.
Virbius orientalis Lenz, 1912, Ark. Zool., vol. 7 pt. 29, p. 2.
Hippolyte ventricosus Kemp, 1914, Rec. Indian Mus., vol. 10, p. 96, pl. 2 figs. 1-3.
Hippolyte australiensis Kemp, 1914, Rec. Indian Mus., vol. 10, p. 98, pl. 2 fig. 6.
Hippolyte orientalis Lenz & Strunck, 1914, Deutsche Südpolar Exped., vol. 15, p. 319.
Hippolyte ventricosus Kemp, 1916, Rec. Indian Mus., vol. 12, p. 391.
Hippolyte australiensis Coulon, 1918, Bull. Soc. Étud. Sci. nat. Elbeuf, vol. 36, p. 19.
Hippolyte orientalis p.p. Balss, 1927, Trans. zool. Soc. Lond., vol. 22, p. 223.
Hippolyte orientalis p.p. Gurney, 1927 a, Trans. zool. Soc. Lond., vol. 22, p. 229.
Hippolyte ventricosus Gurney, 1927 b, Trans. zool. Soc. Lond., vol. 22, p. 391, figs. 94, 95.
Hippolyte australiensis Hale, 1927 b, Crust. S. Aust., vol. 1, p. 50, fig. 42.
Hippolyte australiensis Hale, 1928, Rec. S. Aust. Mus., vol. 4, p. 91, fig. 19.

Siboga Expedition

Near Station 76, Makassar Strait, 4° 22′.1 S, 118° 16′.9 E; in Sargassum; June 9, 1899. — 20 specimens (included ovigerous females) 8-23 mm.

Station 230, S.E. of Ambon, 3° 58′ S, 128° 20′ E; in Sargassum; November 14, 1899. — 1 ovigerous female 21 mm.

Boeton Strait, S.E. Celebes (Station 204-207); between floating weeds; September 20 and 21, 1899. — 3 specimens (1 ovigerous female) 8-19 mm.

Snellius Expedition

Red Sea, 17° 30′ N, 40 ° 39′ E; surface, handnet; April 17, 1929. — 33 specimens (including ovigerous females) 6-10 mm.

Station 64, Sulu Sea, 7° 41′.0 N, 121° 01′.5 E; surface, handnet; September 6, 1929. — 41 specimens (including ovigerous females) 11-27 mm.

Sipankot, near Sibutu, Sulu Archipelago; between seagrass near the shore; September 11, 1929. — 7 specimens (including ovigerous females) 8-10 mm.

Menado, N. Celebes; September 25, 1929. — 1 specimen 12 mm.

Kera near Timor; 0-1 m; November 11-13, 1929. — 5 specimens (including ovigerous females) 8-11 mm.

Station 317 a, Flores Sea, 7° 55′.0 S, 122° 12′.5 E; August 23, 1930. — 1 specimen 7 mm.

Ambon; September 11-17, 1930. — 1 ovigerous female 9 mm.
Station 330, Ceram Sea, 2° 22′.5 S, 128° 00′.5 E; September 8, 1930. — 12 specimens 8-12 mm.
Station 331, between Boeroe and Celebes, 3° 34′.0 S, 124° 20′.5 E; September 19, 1930. — 4 specimens (including ovigerous females) 7-20 mm.
Station 364, N. of Tanimbar Islands, 6° 26′.5 S, 131° 40′.0 E; October 23, 1930. — 1 specimen 8 mm.

The material from the Malay Archipelago examined by me can be divided roughly into two groups, viz., those specimens, which are collected on high sea (in *Sargassum*) and those specimens collected near the shore between seagrass, etc. The pelagic specimens are larger (the ovigerous females vary between 16 and 27 mm in length) than the litoral forms (ovigerous females between 8 and 10 mm in my material). Except for a slight difference in the rostral formula no other differences could be observed. The pelagic Red Sea specimens are much smaller than the pelagic specimens from the Malay Archipelago. That the size of the present species is very variable becomes obvious also

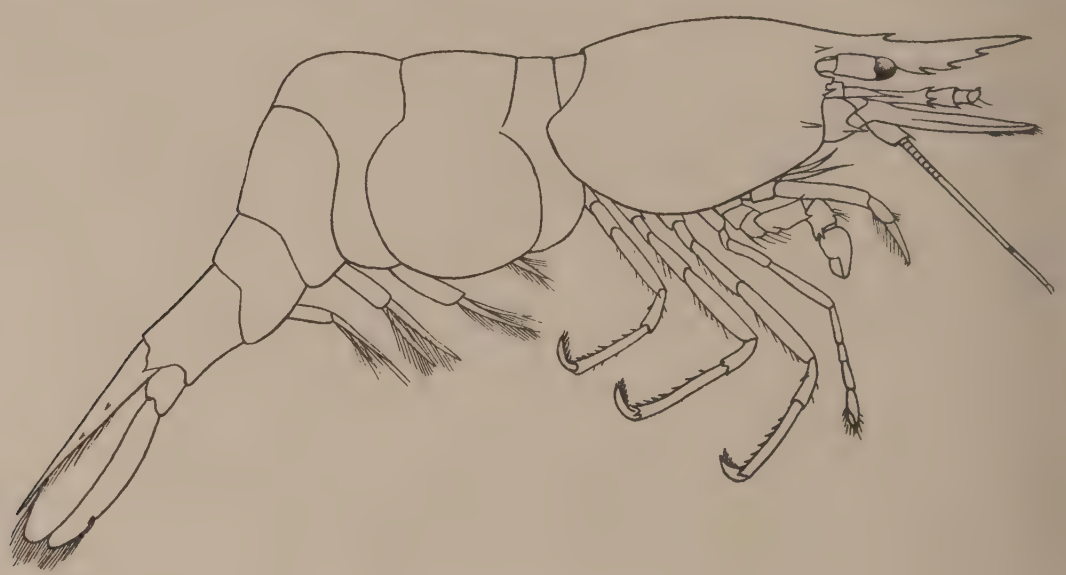

Fig. 7. *Hippolyte ventricosa* H. Milne Edw. ×8.

from the different statements in literature: K e m p (1914) mentions specimens from 7-20 mm length and G u r n e y's (1927 b) Red Sea specimen measured 24 mm.

The specimens from the Malay Archipelago are exactly intermediate between *Hippolyte ventricosa* and *H. australiensis* as concepted by K e m p (1914). K e m p namely gives the following differences between the two species:

1. In *Hippolyte ventricosa* the rostrum is provided with 1 or 2 dorsal teeth (and with 2 or 3 rarely 4 ventral teeth?), in *H. australiensis* no dorsal and 4-6, rarely 3 ventral teeth are present.
2. The second and third segments of the antennular peduncle are shorter and broader in *H. australiensis* than in *H. ventricosa*. In the former species the second segment is broader than long.
3. The length of the antennal scale in *H. australiensis* is 3½ times its breadth; in *H. ventricosa* no more than three times.
4. The last segment of the third maxillipede in *H. australiensis* is scarcely twice as long as the

penultimate segment. The relation between these segments in *H. ventricosa* is not mentioned by Kemp.

The distal segment of the carpus of the second pereiopod in *H. australiensis* is distinctly longer than the proximal, in *H. ventricosa* it is distinctly shorter.

In my material of the Malay Archipelago the following rostral formulae could be observed:

Fig. 8. *Hippolyte ventricosa* H. Milne Edw. second pereiopod. × 20.

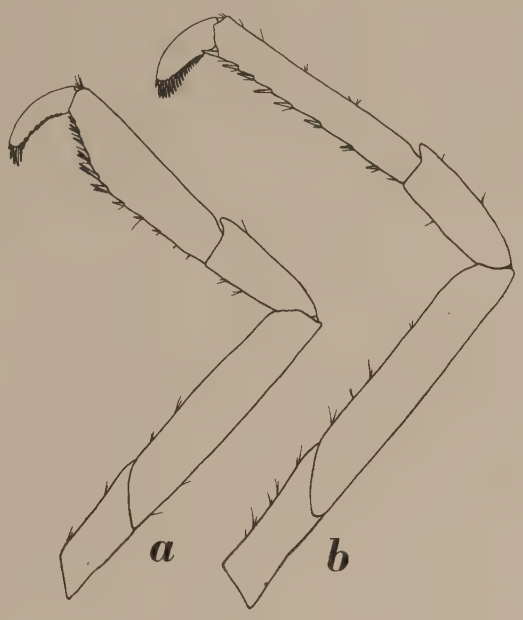

Fig. 9. *Hippolyte ventricosa* H. Milne Edw.
a. third pereiopod of male. × 20.
b. third pereiopod of female. × 20.

ovigerous females (pelagic forms): $\frac{0}{5}$ (4 specimens), $\frac{1}{5}$ (4 specimens), $\frac{0}{4}$ (8 specimens), $\frac{1}{4}$ (6 specimens), $\frac{0}{3}$ (5 specimens), $\frac{1}{3}$ (9 specimens), $\frac{2}{2}$ (1 specimen), $\frac{1}{1}$ (1 specimen) and one specimen with a broken rostrum.

ovigerous females (litoral forms): $\frac{1}{2}$ (5 specimens), $\frac{2}{2}$ (1 specimen), $\frac{0}{1}$ (2 specimens), $\frac{1}{1}$ (2 specimens).

females without ova (pelagic forms): $\frac{0}{3}$ (5 specimens), $\frac{1}{3}$ (4 specimens), $\frac{0}{2}$ (1 specimen), $\frac{1}{2}$ (1 specimen), $\frac{1}{1}$ (2 specimens), $\frac{0}{0}$ (1 specimen).

males (pelagic forms): $\frac{0}{4}$ (1 specimen), $\frac{1}{4}$ (1 specimen), $\frac{0}{3}$ (2 specimens), $\frac{1}{3}$ (8 specimens), $\frac{0}{2}$ (2 specimens), $\frac{1}{2}$ (9 specimens), $\frac{0}{1}$ (1 specimen).

males (litoral forms): $\frac{1}{2}$ (1 specimen), $\frac{0}{1}$ (1 specimen).

The average spinulation is of ovigerous females (pelagic): $\frac{0-1}{3-4}$, of ovigerous females itoral): $\frac{1}{1-2}$, of females without ova (pelagic): $\frac{0-1}{2}$, of males (pelagic): $\frac{1}{2-3}$, of males (litoral): $\frac{-1}{-2}$. In my Red Sea specimens the average formula is as follows: ovigerous females $\frac{1}{2}$, females ithout ova $\frac{1-2}{1-2}$, males $\frac{1}{1}$. The formula of the Malay specimens $\left(\frac{0-1}{2-5}\right)$ is intermediate between iat of the Indian specimens $\left(\frac{1-2}{2-3}\right)$ and that of the Australian forms $\left(\frac{0}{4-6}\right)$.

The antennular peduncle in my Malay specimens has the second segment slightly longer than road. The scaphocerite is about 3 times as long as broad. The distal and proximal segments of

the carpus of the second pereiopod are subequal (fig. 8), sometimes the distal is slightly longer than the proximal, sometimes it just is the reverse (also in my Red Sea specimens often the distal segment is as long as or longer than the proximal).

It is my opinion that *H. ventricosa* and *H. australiensis* belong to one species, of which till now only the extremes were known. The Indian and Australian specimens perhaps may be considered as geographical forms of that species, as the differences mentioned by Kemp seem to be constant for the specimens from the extreme parts of the range of distribution of the species, but show transitions in the intermediate regions.

In all male specimens at hand the last three pereiopods are subprehensile: the propodus is broadened in the anterior part and provided there with many spines, the dactylus flangs back again that broadened part of the propodus (fig. 9a). This character is absent in all female specimens (fig. 9 b). Various authors have considered this character to be one of specific value, so for instance Chace (1937) considers his *H. mexicana* to be "the Pacific representative of the group made up of *H. exilirostris* Dana from Brazil and *H. curaçaoensis* Schmitt from Curaçao, both of which have the last three thoracic legs well adapted for prehensile purposes." All Chace's specimens were males.

Vertical distribution. The species is a form from superficial waters, it either lives between seaweeds near the shore or in floating weeds on high sea.

Horizontal distribution. Records in literature are: Asiatic seas (H. Milne Edwards, 1837 b), Bitter Lakes, Suez Canal (Balss, 1927; Gurney, 1927 a, b), Red Sea, (Heller, 1862 a; Lenz, 1912), Zambesi (Hilgendorf, 1878), Kilakarai, Apa Island and Pamban, S. India (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1916), Indian Ocean, 30° S, 70° E (Lenz & Strunck, 1914), W. Australia (Hale, 1927 b, 1928), S. Australia (Hale, 1927 b, 1928), St. Vincent Gulf, S. Australia (Bate, 1863; Haswell, 1882), New S. Wales (Kemp, 1914; Hale, 1927 b, 1928), Port Jackson, New S. Wales (Stimpson, 1860; Haswell, 1882; Whitelegge, 1890), Marouba, near Sydney (Coulon, 1918).

Hippolyte bifidirostris (Miers)

Virbius bifidirostris Miers, 1876 a, Ann. Mag. nat. Hist., ser. 4 vol. 17, p. 224.
Virbius bifidirostris Miers, 1876 b, Catal. Crust. New Zeal., p. 81, pl. 2 fig. 1.
Virbius bifidirostris Filhol, 1885, Bibl. Éc. haut. Étud., vol. 30 pt. 2, p. 52.
Virbius bifidirostris Filhol, 1886, Miss. Ile Campbell, vol. 3 pt. 2, p. 432.
Hippolyte bifidirostris Thomson, 1903, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 8, p. 443, pl. 28 figs. 13-16.
Hippolyte bifidirostris Hutton, 1904, Index Faun. Nov. Zeal., p. 254.
Hippolyte bifidirostris Thomson, 1913, Trans. Proc. New Zeal. Inst., vol. 45, p. 240.

Museum Leiden

Great Barrier Reef, Australia; leg. H. Suter. — 1 specimen 22 mm.

The present record should be the first outside New Zealand. It is possible, however, that the specimen is wrongly labelled, and that it indeed originates from New Zealand, which is the

)re probable as most material from this collector obtained by the Leiden Museum was collected in ew Zealand.

The specimen is not in a very good condition, but nevertheless could be identified with tainty with the present species.

Vertical distribution. The species is mentioned from depths of 18 and 36 m (Thomson, 03).

Horizontal distribution. Records in literature are: New Zealand (Miers, 1876 a, b; Filhol, 85, 1886), Kenepuru (Thomson, 1903), Otago Harbour (Thomson, 1903, 1913), Paterson let, Stewart Island (Thomson, 1903).

Latreutes Stimpson, 1860

Like *Hippolyte* this genus presents large difficulties by the strong variation of the rostrum, that many species probably must be considered as identical, as they only are based on characters ncerning the shape of that organ. Only from the descriptions the identity mostly cannot be proven many important characters are not mentioned therein, so for instance the indopacific species: *dorsalis, foliirostris, mucronatus, natalensis, planus* and *unidentatus* are very closely related if not entical, but by the insufficient descriptions and figures of many of them no definite conclusions n be made. *Concordia gibberosa* Kingsley is based, as Schmitt (1935) pointed out, on an nperfect specimen and distinctly belongs to *Latreutes;* Schmitt therefore names it *Latreutes ibberosus.* The species is, however, already described by Stimpson (1866) under the name *hynchocyclus parvulus.* The correct name of the species thus is *Latreutes parvulus* (Stimps.).

Latreutes compressus (Stimpson)

Rhynchocyclus compressus Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 28.
Caradina truncifrons Bate, 1863, Proc. zool. Soc. Lond., 1863, p. 499, pl. 40 fig. 2.
Rhynchocyclus compressus Haswell, 1882, Catal. Aust. Crust., p. 182.
Caridina truncifrons Haswell, 1882, Catal. Aust. Crust., p. 183.
Rhynchocyclus compressus Whitelegge, 1890, Journ. Roy. Soc. New S. Wales, vol. 23, p. 233.
Latreutes truncifrons Ortmann, 1894 b, Proc. Acad. nat. Sci. Philad., 1894, p. 406.
Latreutes truncifrons Hale, 1927b, Crust. S. Australia, vol. 1, p. 51, fig. 44.
Latreutes truncifrons Hale, 1928, Rec. S. Aust. Mus., vol. 4, p. 93, fig. 20.
Latreutes truncifrons McNeill & Ward, 1930, Rec. Aust. Mus., vol. 17, p. 359.

The identity of *Rhynchocyclus compressus* Stimpson and *Caradina truncifrons* Bate is very bvious, when comparing the two original descriptions and the descriptions and figures given by ter authors of *Latreutes truncifrons. Rhynchocyclus compressus* was collected near Port Jackson New S. Wales) and *Caradina truncifrons* in S. Australia, but in 1930 *Latreutes truncifrons* also as been recorded from New S. Wales (McNeill & Ward). Stimpson's name, though verlooked by most of the later authors, has priority over that of Bate and therefore must be used.

Vertical distribution. The species is a litoral form.

Horizontal distribution. Port Jackson, New S. Wales (Stimpson, 1860; Haswell, 1882; Whitelegge, 1890), Gunnamatta Bay, Port Hacking, New S. Wales (McNeill & Ward, 930), St. Vincent Gulf, S. Australia (Bate, 1863; Haswell, 1882; Hale, 1927 b, 1928).

Latreutes mucronatus (Stimpson)

Rhynchocyclus mucronatus Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 28.
non *Latreutes mucronatus* Doflein, 1902, Abh. Bayer. Akad. Wiss., vol. 21, p. 638, pl. 5 fig. 6.
Latreutes Gravieri Nobili, 1904, Bull. Mus. Hist. nat. Paris, vol. 10, p. 231.
Latreutes mucronatus multidens Nobili, 1905 c, Bull. Mus. Hist. nat. Paris, vol. 11, p. 395.
Latreutes Gravieri Nobili, 1906 a, Bull. sci. France Belg., vol. 40, p. 39, pl. 3 fig. 5.
Latreutes mucronatus multidens Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 41, pl. 2 fig. 3.
Latreutes Gravieri Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 41.
Latreutes mucronatus Balss, 1914 a, Abh. Bayer. Akad. Wiss., suppl. vol. 2 pt. 10, p. 47, fig. 27.
Latreutes mucronatus Kemp, 1914, Rec. Indian Mus., vol. 10, p. 101, pl. 3 fig. 8-15, pl. 4 fig. 1, 2.
Latreutes mucronatus Kemp, 1916, Rec. Indian Mus., vol. 12, p. 396.
Latreutes mucronatus Balss, 1921, K. Svenska Vetensk. Akad. Handl., vol. 61 pt. 10, p. 10.
Latreutes mucronatus Urita, 1926, Dobuts Zasshi, vol. 38, p. 427.
Latreutes mucronatus Boone, 1935, Bull. Vanderbilt mar. Mus., vol. 6, p. 195, pl. 53.
Latreutes mucromatus Yu, 1935, Chin. Journ. Zool., vol. 1, p. 50.
Latreutes mucronatus ? Gurney, 1937, Discovery Rep., vol. 14, p. 398, figs. 134-137.

Siboga Expedition

Station 273, anchorage off Djedan Island, eastcoast of Aroe Islands; pearlbanks; December 23-26, 1899. — 1 ovigerous female 10 mm.

Snellius Expedition

Southern entrance of Makassar Strait, 4° 24′.5 S, 118° 47′.5 E; handnet, surface, between algae; August 2, 1929. — 1 specimen 13 mm.

The present species seems to be rather rare in the Malay Archipelago as each of the two expeditions dealt with here collected one specimen only, and as previously only twice specimens are reported from the region (Nobili, 1906 b; Boone, 1935). The specimens entirely agree with Kemp's description and figures at which I have nothing to add. The species mentioned by Doflein as *L. mucronatus* belongs to *L. planirostris* (De Haan), as already stated by Balss (1914 a).

Vertical distribution. The species is a litoral form.

Horizontal distribution: Red Sea (Nobili, 1905 c, 1906 b), Jibuti (Nobili, 1904, 1906 b), off the southcoast of Arabia, 16° 35′ N, 54° 26′ E (Nobili, 1906 a), Kilakarai and Pamban, S. India (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1916), Misaki, Sagami Bay (Balss, 1914 a), Chemulpho, Korea (Balss, 1914 a), Peitaiho and Kiuchow Bay (Yu, 1935), Tsingtao (Urita, 1926), Hongkong (Stimpson, 1860), Gulf of Siam (Balss, 1914 a), Banka (Boone, 1935), Java (Nobili, 1906 b), Cape Jaubert, N.W. Australia (Balss, 1921), ? 2 miles N.E. of Low Isles, Great Barrier Reef (Gurney, 1937).

Latreutes anoplonyx Kemp

Latreutes anoplonyx Kemp, 1914, Rec. Indian Mus., vol. 10, p. 104, pl. 4 figs. 3-5.
Latreutes anoplonyx Kemp, 1916, Rec. Indian Mus., vol. 12, p. 399.
Latreutes anoplonyx De Man, 1929, Vid. Medd. naturh. Foren. Kbh., vol. 87, p. 130, fig. 8.

Museum Leiden

Off Batavia; in subgenital cavity of the Scyphomedusan jellyfish *Acromitus flagellatus* (Haeck.); 1909; leg. P. Buitendijk. — 1 ovigerous female 28 mm.

Off Panaroekan, E. Java; July, 1915; leg. P. Buitendijk. — 14 specimens (included ovigerous females) 12-25 mm.

My specimens entirely agree with Kemp's (1914) description and with the informations ven later on by Kemp (1916) and De Man (1929). Often many more denticles are present near e apex than figured by De Man. In my specimens the spines at the anterolateral angle of the rapace vary in number between 7 and 11. In De Man's figure of the dactylus of the fifth reiopod the microscopical spinules seem to be fairly large, they are, however, much smaller an in the other species of the present genus and moreover not easily visible as they are very pellucid. is noteworthy that De Man's as well as one of my specimens were found inside a scyphomedusa. erhaps we have to do here with a case of commensalism or symbiosis.

Vertical distribution. The species is a form of superficial water. The only exact record of ie depth is that of Kemp (1916): 12.5-15 m.

Horizontal distribution. Records in literature are: Bombay (Kemp, 1914, 1916), Burma oast (Kemp, 1916), Tandjoeng Krawang, near Batavia (De Man, 1929).

Angasia Bate, 1863

As Henderson (1893) already pointed out the name *Tozeuma* of Stimpson (1860) or the present genus is not correctly spelled, it must be written *Toxeuma,* according to the greek vord Τόξευμα which Stimpson gives in a footnote to explain the meaning of his new generic name. As already pointed out by Henderson too, *Toxeuma* was already used for a genus of Hymenoptera before Stimpson's publication of that name and therefore may not be used for the present genus. Bate's name *Angasia* for this genus is the correct name. Kemp (1914), notwithstanding he footnote in his article in which he explains the situation, uses the name *Tozeuma* and is followed n this respect by many other authors. Stephensen (1927) gave a key to almost all the species of he present genus.

In our collections only one species is present.

Angasia armata (Paulson) (figs. 10, 11)

Tozeuma armatum Paulson, 1875, Invest. Crust. Red Sea, p. 99, pl. 15 fig. 2.

Angasia Stimpsonii Henderson, 1893, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 5, p. 437, pl. 40 figs. 18-20.

Angasia armata Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 42.

Tozeuma armata Sewell, 1913, Journ. Proc. Asiat. Soc. Bengal, n. ser. vol. 9, p. 350.

Angasia armata Balss, 1914 a, Abh. Bayer. Akad. Wiss., suppl. vol. 2 pt. 10, p. 48.

Tozeuma armatum Kemp, 1914, Rec. Indian Mus., vol. 10, p. 106.

Tozeuma armatum Kemp, 1916, Rec. Indian Mus., vol. 12, p. 399, fig. 4.

Tozeuma armatum Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 402.

Tozeuma armatum Stephensen, 1927, Vid. Medd. naturh. Foren. Kbh., vol. 83, p. 297.

Siboga Expedition

Station 7, near reef of Badjoelmati, E. Java, 7° 55′.5 S, 114° 26′ E; reef; March 11, 1899. — 1 specimen 28 mm.
Station 164, between Misool and N. New Guinea, 1° 42′.5 S, 130° 47′.5 E; dredge, 32 m; bottom shells, small stones and sand; August 20, 1899. — 1 specimen 18 mm.
Station 310, east of Soembawa, 8° 30′ S, 119° 7′.5 E; dredge, 73 m; bottom sand with few pieces of dead coral; February 12, 1900. — 1 specimen 40 mm.

Snellius Expedition

Station 60*, Basilan Strait, Sulu Archipelago, 6° 58′.0 N, 121° 52′.5 E; trawl, 72-80 m; September 5, 1929. — 3 specimens 43-47 mm.

The specimen from Sta. 7 of the Siboga Expedition has the rostrum broken, that of Sta. 164 is in a very bad condition; nevertheless all specimens could be identified with certainty as belonging to the present species.

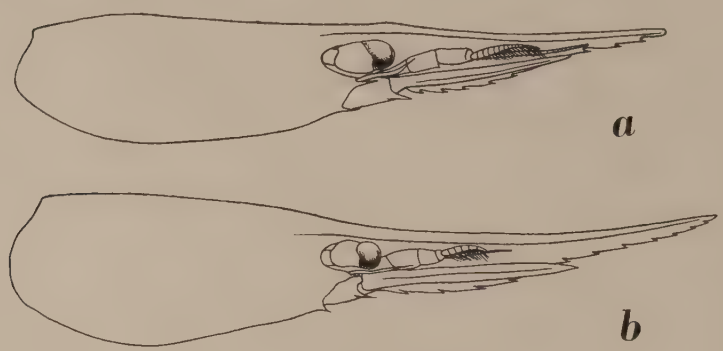

Fig. 10. *Angasia armata* (Pauls.)
a. frontal part of male in lateral view. × 5.
b. frontal part of female in lateral view. × 5.

Fig. 11. *Angasia armata* (Pauls.) abdomen in lateral view. × 5.

Kemp (1914) mentions that the third article of the carpus in his specimens is slightly longer than the median, in some of my specimens it is distinctly longer, being only a little shorter than the proximal segment.

Stimpson's *Tozeuma lanceolatum* seems to differ from the present species only in the different length of some parts. These differences, which are noted from the comparison between the specimens at hand and Stimpson's description are:

1. The rostrum in my specimens as well as those figured in literature are about half as long as the rest of the body, in Stimpson's specimen it measures ¾ of the body.
2. The antennae are longer than the rostrum in *A. armata*. (Perhaps they are broken in Stimpson's specimen, because they are stated to be shorter than the rostrum).

The scaphocerite is about half as long as the rostrum in the present specimens (not 1/3). The scaphocerite in *A. armata* is more than 4 times as long as broad.

Henderson (1893) does not mention the presence of an antennal spine, he only describes e pterygostomial spine. Paulson mentions both these spines, which are also present in my ecimens. The lower angle of the orbit is rounded, the antennal spine is placed just below it. ı my female specimens the antennulae are distinctly shorter than the scaphocerite (fig. 10 b), while the males the inner flagellum reaches the end of that scale (fig. 10 a). Perhaps the difference is secondary sexual one. The posteromedian spines of the third, fourth and fifth abdominal segment ıffer in size: that of the third segment is highest and much compressed, the tip is curved posteriorly; ıe spine of the fourth segment is smallest, not compressed; that of the fifth in some of my specimens high and compressed, being distinctly longer than that of the fourth segment (fig. 11), in other ecimens the difference is not so obvious. This difference of the spines is not shown in Henderon's description and figure, in Paulson's figure the shape of the spine of the third segment entirely in accordance with that of my specimens, like Henderson he figures those of the ourth and fifth segment as being of the same size. The fifth abdominal pleura in all my specimens nds in two posterior spines, one at the upper part and one at the lower part of the posterior margin f the pleura, just as stated by Kemp (1914); Paulson figures only one spine there and Henderson does not mention or figure any spine at the pleura of the fifth abdominal segment.

One of the specimens of the Snellius Expedition is bopyrized.

Vertical distribution. The species most commonly is met with in superficial waters. The greatest depth from which it is recorded is 150 m (Balss, 1914 a; Stephensen, 1929).

Horizontal distribution. Records in literature are: Red Sea (Paulson, 1875; Nobili, 906 b), Cargados Garajos (Borradaile, 1917), Seychelles (Borradaile, 1917), Maldive slands (Borradaile, 1917), Mandapam, S. India (Kemp, 1916), off S.E. Ceylon, 6° 2'.5 N, 1° 29' E (Sewell, 1913; Kemp, 1914), off Cinque Island, Andaman Islands (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1916), Burma coast (Kemp, 1916), Gulf of Martaban (Henderson, 1893), Singapore (Stephensen, 1927), Sagami Bay, Japan (Balss, 1914 a), ava Sea, 5° 52' S, 106° 4' 5" E (Stephensen, 1927), Batavia (Balss, 1914 a), Ambon Bay (Stephensen, 1927).

Gelastocaris Kemp

Gelastocaris paronae (Nobili)

Latreutes Paronae Nobili, 1905 a, Boll. Mus. Zool. Anat. comp. Torino, vol. 20 n. 506, p. 2, textfig.
Gelastocaris paronae Kemp, 1914, Rec. Indian Mus., vol. 10, p. 107, pl. 5.
Gelastocaris paronae Kemp, 1916, Rec. Indian Mus., vol. 12, p. 401.
Gelastocaris paronae Balss, 1921, K. Svenska Vetensk. Akad. Handl., vol. 61 pt. 10, p. 10.
Gelastocaris paronae Kemp, 1925, Rec. Indian Mus., vol. 27, p. 337.

Siboga Expedition

Station 273, anchorage off Djedan Island, eastcoast of Aroe Islands; pearlbanks; December 23-26, 1899. — 3 specimens 10-14 mm.

Station 299, Bokai or Cyrus Bay, southcoast of Roti, 10° 52'.4 S, 123° 1'.1 E; depth up to 36 m; January 27-29, 1900. — 2 specimens (1 ovigerous female) both in bad condition.

The specimens entirely agree with Kemp's (1914) excellent description and figures. The specimens from Station 299 are in a rather bad condition, but nevertheless could be brought with certainty to this very characteristic species.

Vertical distribution. The species is a superficial form. The largest depth from which it is recorded is 26 m (Balss, 1921).

Horizontal distribution. Records in literature are: Zanzibar (Nobili, 1905 a), Ceylon pearlbanks (Kemp, 1914), 3 miles N.N.W. of Port Pedro, Ceylon (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1916, 1925), Cape Jaubert, N.W. Australia (Balss, 1921).

Mimocaris Nobili

Mimocaris heterocarpoides Nobili

Mimocaris heterocarpoides Nobili, 1903, Boll. Mus. Zool. Anat. comp. Torino, vol. 18 n. 447, p. 6, fig. 2.
Mimocaris heterocarpoides Balss, 1933, Mitt. zool. Mus. Berlin, vol. 19, p. 86.

The present species, though not present in the collections at hand, is inserted in this paper, as it is recorded in literature from the Dutch Indies. The genus is closely related to *Hippolysmata*, but differs from it in the curious armament of the carapace and abdomen.

Vertical distribution. Litoral form.

Horizontal distribution. The species is recorded from Bagansiapiapi, eastcoast of Sumatra (Balss, 1933), Brouwerstrait, eastcoast of Sumatra (Balss, 1933) and from Pulo Burong, N.W. Borneo (Nobili, 1903).

Lysmata Risso, 1826

In the present collections two species are present.

Lysmata dentata (De Haan)

Palaemon dentatus De Haan, 1841, Fauna Japonica Crust., pl. 45 fig. 13.
Lysmata seticaudata De Haan, 1849, Fauna Japonica Crust., p. 176.
Lysmata Seticaudata Herklots, 1861, Tijdschr. Ent., vol. 4, p. 146.
Lysmata seticaudata De Man, 1888a, Arch. Naturgesch., vol. 53 pt. 1, p. 492.
Lysmata seticaudata p.p. Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 507.
Lysmata seticaudata ternatensis De Man, 1902, Abh. Senckenb. naturf. Ges., vol. 25, p. 846.
Lysmata seticaudata Calman, 1909, Proc. zool. Soc. Lond., 1909, p. 706.
Lysmata affinis Borradaile, 1915, Ann. Mag. nat. Hist., ser. 8 vol. 15, p. 209.
Lysmata affinis Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 402.

Siboga Expedition

Station 78, Loemoe loemoe Shoal, Borneo Bank; shore; June 10 and 11, 1899. — 5 specimens (included ovigerous females) 15-26 mm.
Station 213, Pasitanete Island, Salajar Group; reef; September 26-October 26, 1899. — 2 specimens 16 and 25 mm.

Snellius Expedition

Wotap, Tanimbar Islands; shore and reef; October 20-23, 1929. — 1 specimen 30 mm.
Kera near Timor; November 11-13, 1929. — 1 specimen 17 mm.
Morotai; June 3-10, 1930. — 1 specimen 28 mm.

Museum Amsterdam

Lesser Soenda Islands; December 18, 1909; leg. H. J. M. Laurense. — 2 specimens (included 1 ovigerous female) 23 and 25 mm.

This species is very closely related to the european *Lysmata seticaudata* (Risso) from which it fers in the following points:

The rostrum generally is slightly shorter.

The shorter ramus of the upper antennular flagellum has the free part as long as the fused portion; in *Lysmata seticaudata* it is much shorter than the fused portion.

The carpus of the second pereiopod generally contains less joints. In specimens at my disposal the number varies between 21 and 26, being mostly 23-25. De Haan's specimen, according to the figure has 23 joints, that of De Man (1902) 24 joints, while in the specimens examined by Borradaile (1917) 24 or 25 joints were present. In twelve specimens of *Lysmata seticaudata* from the Mediterranean which I could examine the number of carpal joints varies between 28 and 36 joints, being mostly 30-32.

Palaemon dentatus De Haan (1841), later on regarded by De Haan (1849) as identical ith *Lysmata seticaudata,* undoubtedly belongs to the present species, though the rostrum in his gure is drawn about as long as in the european species. Unfortunately De Haan's typespecimen no longer extant in the Rijksmuseum van Natuurlijke Historie at Leiden.

Lysmata affinis Borradaile (1915) is identical with the present species, as is distinctly shown the enumeration of the characters which distinguish *L. affinis* from the other species of the genus.

Hippolysmata acicula Rathbun (1906) as pointed out by Schmitt (1924 b) does not belong *Hippolysmata* but to *Lysmata,* as the upper flagellum of the antennule is biramous. *Lysmata acicula* Rathbun, 1906) shows a strong resemblance to the present species; as far as can be concluded from e very short description and the photograph given by Rathbun, it only differs from *Lysmata ntata* by having the carpus of the second pereiopod 29-articulate.

Vertical distribution. The species is a litoral form.

Horizontal distribution. Records in literature are: Seychelles (Borradaile, 1915, 1917), eros Banhos, Chagos Archipelago (Borradaile, 1915, 1917), Salomon, Chagos Archipelago Borradaile, 1915, 1917), Minikoi (Borradaile, 1915, 1917), Christmas Island (Calman, 909), Japan (De Haan, 1841, 1849), Kadsiyama, Japan (Ortmann, 1890), Ternate, Moluccas De Man, 1902), Ambon (De Man, 1888 a).

Lysmata trisetacea (Heller)

Hippolyte trisetacea Heller, 1861, Verh. zool.-bot. Ges. Wien, vol. 11, p. 29.
Lysmata pusilla Heller, 1862 a, S. B. Akad. Wiss. Wien, vol. 44 pt. 1, p. 287, pl. 3 fig. 26.
? *Hippolysmata paucidens* Rathbun, 1906, Bull. U.S. Fish Comm., vol. 23 pt. 3, p. 913, pl. 24 fig. 4.
Merhippolyte spinifrons Chilton, 1911, Trans. New Zeal. Inst., vol. 43, p. 547.

Lysmata chiltoni Kemp, 1914, Rec. Indian Mus., vol. 10, p. 110, pl. 6 figs. 1-4.
Lysmata trisetacea Balss, 1915, Denkschr. Akad. Wiss. Wien, vol. 91 suppl., p. 25.
Lysmata trisetacea Balss, 1925, Wiss. Ergebn. Valdivia Exped., vol. 20, p. 292.
? *Hippolysmata paucidens* Edmondson, 1925, Bull. Bishop Mus. Honolulu, vol. 27, p. 6.
? *Hippolysmata paucidens* Pesta, 1933, Zool. Anz., vol. 104, p. 279.
? *Lysmata paucidens* Schmitt, 1939, Smiths. misc. Coll., vol. 98 n. 6, p. 12.
Lysmata chiltoni Kubo, 1940, Journ. Imp. Fish. Inst. Tokyo, vol. 34, p. 77.

Snellius Expedition

Obi latoe; shore and reef; April 23-27, 1930. — 4 specimens (included ovigerous females) 17-20 mm

Museum Leiden

Locality unknown. — 2 specimens (1 ovigerous female) 12 and 19 mm.

Balss (1915) considers *L. chiltoni* Kemp as probably identical with *L. trisetacea*, in 1925 he confirmed this opinion. Kemp (1914) mentions the following differences between the two species:

1. In *L. trisetacea* the rostrum carries dorsally four teeth, *L. chiltoni* has five there, which are placed much closer together; the lower margin of the rostrum in both species bears two teeth, which in *L. chiltoni* are placed closer to the tip.
2. The upper antennular flagellum in *L. chiltoni* has the free part of the shorter ramus about as long as the fused part, while in *L. trisetacea* one third of the shorter ramus is fused, thus the free portion being twice as long as the fused.
3. A third difference according to Kemp should be that in *L. trisetacea* the final tooth of the scaphocerite should reach beyond the tip of the lamella. But this also is the case in *L. chiltoni* according to Kemp's description. So only the two first characters remain.

Balss (1915, 1925) already pointed to the variability of the rostrum, which in his specimens from the Red Sea and the Western Indian Ocean are provided dorsally with 4-6 teeth. In my specimens, which all are provided with four dorsal teeth, the situation of the ventral teeth is rather variable, sometimes the first tooth is placed just below the last dorsal tooth, sometimes before it and in one case slightly behind it. We see therefore that the arrangement of the teeth of the rostrum is so variable that this character cannot be used for the distinction of the two species.

The character of the relation between the free and fused portion of the shorter ramus of the upper antennular flagellum is slightly variable in my material, mostly the free part is about as long as the fused portion, sometimes slightly longer, but never twice as long, as described by Heller for his specimen. In my opinion the difference in this feature between the two species is too small to be of specific importance, the more as it is possible that Heller has not accurately described this relation in his specimen; I therefore agree with Balss in uniting the two species.

My specimens differ from Heller's description in the fact that the third maxillipedes are provided with distinct stiff hairs and from Kemp's description by having the fingers of the second pereiopods of the same length. Perhaps the feature of the unequal fingers in Kemp's specimen is aberrant. The specimens from the Snellius Expedition have the carpus of the second

eiopods with 21-23 joints, those of the collection of the Rijksmuseum van Natuurlijke Historie Leiden with 24-26 segments. The specimens at my disposal differ at first sight from those of *dentata* by having the corneae deep black, in the latter species the cornea is pale greyish blue.

Hippolysmata paucidens Rathbun (1906), which as Schmitt (1924b) pointed out, in lity belongs to the genus *Lysmata,* shows strong resemblance with the present species, in fact no ferences could be found between the characters of the present species and those given by Rathn in her description and photograph of *H. paucidens;* also the additional notes from Schmitt 939) on *L. paucidens* gave no further differences with the present species. As, however, some portant features of *L. paucidens* are not known, we cannot identify the two forms with certainty.

Vertical distribution. The species is a litoral form.

Horizontal distribution. Records in literature are: Red Sea (Heller, 1861,1862 a), Ras Abu ner, Red Sea (Balss, 1915), Jidda (Balss, 1915), Diego Garcia (Balss, 1925), Meyer and, New Zealand (Chilton, 1911; Kemp, 1914), Micronesia (Kubo, 1940), Hawaiian chipelago? (Pesta, 1933), Lisiansky Island? (Edmondson, 1925), Laysan? (Rathbun, 06; Edmondson, 1925), French Frigate Shoals ? (Edmondson, 1925), Honolulu ? athbun, 1906), Waikiki, Oahu ? (Rathbun, 1906), Johnston Island ? (Edmondson, 25), Clipperton Island ? (Schmitt, 1939).

Hippolysmata Stimpson (1860)

In the collections at hand five species and one variety of the genus Hippolysmata are resented.

Subgenus **Hippolysmata** Stimpson

Hippolysmata (Hippolysmata) vittata Stimpson

Hippolysmata vittata Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 26.
Nauticaris unirecedens Bate, 1888, Rep. Voy. Challenger Zool., vol. 24, p. 608, pl. 110 fig. 1.
Hippolysmata vittata subtilis Thallwitz, 1892, Abh. zool.-anthrop. Mus. Dresden, vol. 3 pt. 3, p. 22.
Hippolysmata vittata Lanchester, 1901, Proc. zool. Soc. Lond., 1901, p. 563.
Hippolysmata vittata Nobili, 1906 b, Ann. Sci. nat. Zool., ser. 9 vol. 4, p. 46, pl. 2 fig. 4.
Hippolysmata vittata De Man, 1907, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 9, p. 423, pl. 33 figs. 49, 50.
Hippolysmata vittata Balss, 1914 a, Abh. Bayer. Akad. Wiss., suppl. vol. 2 pt. 10, p. 48.
Hippolysmata vittata Kemp, 1914, Rec. Indian Mus., vol. 10, p. 113, pl. 6 figs. 6-10.
Hippolysmata vittata var. ? Kemp, 1914, Rec. Indian Mus., vol. 10, p. 115.
Hippolysmata vittata Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 403.
Hippolysmata vittata Kemp, 1925, Rec. Indian Mus., vol. 27, p. 330.
Hippolysmata vittata Gravely, 1927, Bull. Madras Govt. Mus., n. ser. vol. 1, p. 137, pl. 19 fig. 2.
Hippolysmata vittata Hale, 1929, Trans. Roy. Soc. S. Aust., vol. 53, p. 67.
Hippolysmata vittata Yu, 1935, Chinese Journ. Zool., vol. 1, p. 51.
Hippolysmata vittata Suvatti, 1937, Checklist aquat. Fauna Siam, p. 48.

Siboga Expedition

Station 71, Makassar; May 10—June 7, 1899. — 1 ovigerous female 18 mm.
Station 115, eastside of Pajoenga Island, Koeandang Bay, N. Celebes; reef; July 9-11, 1899. — 1 specimen 14 mm.

Station 152, Woenoh Bay, northwestcoast of Waigeo; reef; August 12 and 13, 1899. — 1 specimen 19 mm.
Station 273, anchorage off Djedan Island, eastcoast of Aroe Islands; pearlbanks; depth 13 m December 23-26, 1899. — 1 specimen 18 mm.

Snellius Expedition

Kera near Timor; November 22 and 23, 1929. — 1 specimen 19 mm.

Museum Leiden

Amoy; leg. G. Schlegel. — 16 specimens (included ovigerous females) 29-43 mm.
Fishmarket, Batavia; March, 1917; leg. P. Buitendijk. — 17 specimens (included ovigerous females) 20-27 mm.
Skroe, New Guinea; 1897; leg. K. Schädler. — 1 specimen 22 mm.

Museum Amsterdam

Balikpapan, Borneo; leg. W. J. Tissot van Patot. — 1 ovigerous female 28 mm.
Bay of Batavia; leg. C. P. Sluiter. — 3 specimens 14-18 mm.

My specimens agree with the descriptions given by De Man (1907) and Kemp (1914). The specimens considered by Kemp to form a separate variety, which differs from the main species by having 28-32 segments in the carpus of the second pereiopod (not 15-24 as in the main form) and by the asymmetry of these legs, do not belong to a distinct variety. In my material specimens are present with 15-31 segments in the carpus of the second pereiopods; I cannot divide them into two groups on account of the number of the carpal joints as Kemp could do in his material. Also the character of the asymmetry of the legs does not coincide with a high number of carpal joints. Hale (1929) also mentions specimens of the present species with a large number of carpal joints (29 and 30) which had symmetrical second legs. Perhaps the asymmetry is a result of regenerated legs.

De Man (1907) pointed out that *Hippolysmata vittata subtilis* Thallwitz is nothing but a small specimen of the present species.

Vertical distribution. The species inhabits superficial waters. The greatest depth from which it is recorded is 54 m (Borradaile, 1917).

Horizontal distribution. Records in literature are: Jibuti (Nobili, 1906b), Cargados Garajos (Borradaile, 1917), Seychelles (Borradaile, 1917), Persian Gulf, 28° 59′ N, 50° 3′ E (Kemp, 1914), Karachi (Kemp, 1914, 1925), Kilakarai, S. India (Kemp, 1914), N. Cheval Paar, Ceylon (Kemp, 1914), Krusadai and Shingle Island, Gulf of Manaar (Gravely, 1927), Madras (Kemp, 1914, 1925), East Island, Andaman Islands (Kemp, 1914), Port Blair, Andaman Islands (Kemp, 1925), Pulau Bidang, Penang (Lanchester, 1901), Dzushi, Sagami Bay (Balss, 1914a), Inland Sea of Japan (De Man, 1907), Liaotung Peninsula, N. China (Yu, 1935), Hongkong (Stimpson, 1860; Bate, 1888), Lang Suen, Siam (Suvatti, 1937), Sebu, Philippines (Thallwitz, 1892), Dirk Hartog Island, W. Australia (Hale, 1929). The present specimens are the first recorded from the Netherlands East Indies.

Hippolysmata (Hippolysmata) kükenthali (De Man)

Merhippolyte orientalis De Man, 1892 a, Weber's Zool. Ergebn. Nied. O. Ind., vol. 2, p. 407.
Merhippolyte orientalis ? De Man, 1902, Abh. Senckenb. naturf. Ges., vol. 25, p. 849, pl. 26 fig. 56.
Hippolyte kükenthali De Man, 1902, Abh. Senckenb. naturf. Ges., vol. 25, p. 850.
Nauticaris unirecedens Pearson, 1905, Rep. Ceylon Pearl Oyster Fish., vol. 4, p. 81.
Hippolysmata kükenthali De Man, 1907, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 9, p. 426.
Hippolysmata kükenthali Kemp, 1914, Rec. Indian Mus., vol. 10, p. 115, pl. 6 fig. 11.
Hippolysmata kükenthali Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 403.
Hippolysmata marleyi Stebbing, 1919, Ann. Durban Mus., vol. 2, p. 120, pl. 18.
Hippolysmata marleyi Stebbing, 1921, Ann. Durban Mus., vol. 3, p. 22.

Siboga Expedition

Station 129, anchorage off Kawio and Kamboling Islands, Kawio Group, N.E. of Celebes; reef; July 22 and 23, 1899. — 1 specimen 14 mm.
Station 169, anchorage off Atiatoening, westcoast of New Guinea; reef; August 23-25, 1899. — 14 specimens (including ovigerous females) 17-24 mm.
Station 225, 5700 M.N. 279° E from Southpoint of South Lucipara Island; November 8, 1899. — 1 specimen 13 mm.
Station 248, anchorage off Roemahloesi, northpoint of Tioor Island; reef; December 4 and 5, 1899. — 1 specimen 13 mm.
Lamakera, Solor; reef (Station 61, May 1 and 2, 1899 or Station 304, February 6-8, 1900). — 5 specimens 12-16 mm.

Museum Leiden

Maoemere, Flores; reef; 1888; leg. M. Weber. — 6 specimens 14-19 mm.

Museum Amsterdam

Inhaca, Portuguese East Africa; leg. C. J. van der Horst. — 1 ovigerous female 26 mm.
Reunion Rocks, Isipingo near Durban; October 28, 1938; leg. H. Engel. — 1 specimen 43 mm
Maoemere, Flores; reef; 1888; leg. M. Weber. — 12 specimens 14-20 mm.

I have nothing to add to De Man's (1902) extensive description and Kemp's (1914) notes. All original specimens of De Man (1892 a) could be examined by me.

Stebbing (1919) described a new species *Hippolysmata marleyi* from Isezela, Natal, without comparing his specimens with De Man's description of *Hippolysmata kükenthali*. In 1921 in a short note Stebbing pointed to the large resemblance between the two species and mentioned the following differences:

. The carpus of the first pereiopod is much shorter in *H. marleyi* than in *H. kükenthali*.
. *H. marleyi* "differs [from *H. kükenthali*] by ... the spinulation of the last three peraeopods". Probably Stebbing intended to indicate that in *H. marleyi* the last three pereiopods have the posterior margin of the propodus devoid of spinules, while in *H. kükenthali* these spinules are distinct; in Stebbing's (1919) figure namely these spinules are not shown.
. In *H. marleyi* the two pairs of apical spines on the telson are absent, while they are present in *H. kükenthali*.

Stebbing's specimen came from Isezela, Natal. In the collection of the Zoological Museum at Amsterdam two specimens of *Hippolysmata kükenthali* are present, which are collected in South Africa: one of them was captured at Isipingo, Natal, the other at Inhaca, Portuguese East Africa, close to the Natal border. The specimens, especially that of Isipingo, are very interesting as they are collected close to the typelocality of *H. marleyi*. The specimen from Isipingo has the carpus of the first pereiopod about as long as the palm, while in the specimen from Inhaca it is distinctly longer. The propodi of the three last pereiopods are provided with spinules in both specimens, which also both have two pairs of small spinules at the posterior margin of the telson. So both specimens show all characteristics of *Hippolysmata kükenthali*. As it is proven now that *Hippolysmata kükenthali* occurs along the eastcoast of South Africa, I think it rather improbable that a second species of this genus which shows only very minor differences from *H. kükenthali* should occur in the same region. In my opinion *H. kükenthali* and *H. marleyi* must be regarded as one species. The differences given by Stebbing may be explained as follows:

1. The length of the carpus of the first pereiopod may be due to variation, which also is indicated by the fact that in one of my South African specimens it is relatively longer than in the other.
2. The spines at the posterior margin of the last pereiopods are very small and may have been overlooked by Stebbing when making his figure. In his description this feature is not mentioned. When Stebbing made his note in 1921, he in all probability could not examine his typespecimen.
3. In regard to the spines on the posterior margin of the telson the same may be remarked as on the spines of the propodus of the last three pereiopods.

Vertical distribution. The greatest depth from which this litoral species is known is 11 m.

Horizontal distribution. Records in literature are: Isezela, Natal (Stebbing, 1919), Egmont Reef, Seychelles (Borradaile, 1917), Galle, Ceylon (Pearson, 1905), Jokkenpidi Paar, Ceylon (Pearson, 1905), N. Cheval Paar, Ceylon (Kemp, 1914), Ternate (De Man, 1902), Maoemere, Flores (De Man, 1892 a).

Hippolysmata (Hippolysmata) amboinensis De Man (figs. 12-14)

Hippolysmata vittata amboinensis De Man, 1888 a, Arch. Naturgesch., vol. 53 pt. 1, p. 495.
Hippolysmata amboinensis De Man, 1907, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 9, p. 426.

Museum Amsterdam

Ambon; leg. J. Brock; coll. J. G. de Man. — 1 specimen 30 mm. Holotype.

Rostrum long and slender, reaching slightly beyond the second segment of the antennular peduncle. It is somewhat curved downward beyond the eyes, but the anterior part is upturned. The upper margin bears six teeth, the first of which, the only one situated on the carapace, is placed further from the second tooth than the second is from the third. Lower margin of rostrum with 4 smaller teeth. Carapace smooth, provided with a large antennal and a much smaller pterygostomial spine.

Abdomen smooth dorsally. The pleurae of the first three segments are rounded, those of

e fourth and fifth segments end in a sharp posteriorly directed spine. The sixth abdominal segment about 1½ times as long as the fifth.

Telson elongate triangular. The outer margins are straight. The upper surface bears two irs of spinules, which are placed in the posterior part. The posterior margin of the telson is ovided with four movable spines, the outer of which are much shorter than the inner ones.

The eyes are well developed and reach slightly beyond the middle of the first antennular gment.

The antennular peduncle is very slender, it reaches the end of the scaphocerite. The first gment is more than half as long as the carapace; the stylocerite is small and pointed, it reaches out ¼ of the length of the first segment. The upper anterior margin of the first segment bears ree small spinules. The second segment is slightly more than half as long as the first; the upper

Fig. 12. *Hippolysmata amboinensis* De Man. × 6.

nterior margin of this segment is provided with two small spinules. Third segment is slightly more han half as long as second. There are two simple flagella.

The scaphocerite is long and slender, reaching as far as the antennular peduncle, it has almost he same breadth over its entire length. The anterior margin of the lamella is almost straight and s outreached by the final tooth of the scaphocerite. Antennal peduncle with a small downwardly lirected spine at the outer margin.

The third maxillipede reaches with more than half its ultimate segment beyond the scaphocerite. The penultimate segment measures ²/₃ of the ultimate. In our specimen the left maxillipede s provided with a rudimentary exopod, while this exopod is altogether absent in the right. Epipods re present on the third maxillipede and on the first four pereiopods.

The first pereiopod reaches the end of the scaphocerite. The chela is stout, the fingers close

over their entire length. The palm is about 2½ times as long as the fingers. The carpus is slightl shorter than the chela. The merus is longer than the carpus. The second pereiopods have the sam length, though in my specimen the left is more slender. The chela is slender. The carpus about times as long as the chela and composed of 19 joints, the last of which is longer than the others being almost as long as the palm. The merus too is distinctly subdivided, 7 or 8 joints may be observed while also some annulations are visible in the anterior part o the ischium. The merus is slightly shorter than the ischium an about half as long as the carpus. The last three pereiopods are o about the same form, they are slender, the fifth reaching with ⅓ of the propodus beyond the scaphocerite. The dactylus is short it ends into two strong spines and at its lower margin is provide with 2 or 3 small spines. The propodus is about 7 times as lon

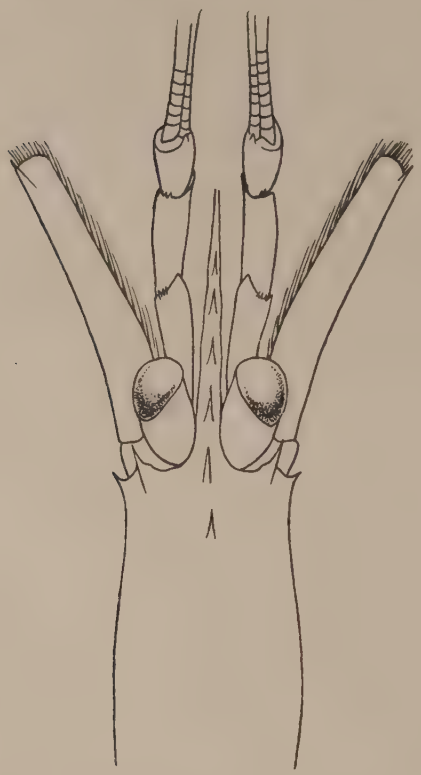

Fig. 13. *Hippolysmata amboinensis* De Man. frontal part in dorsal view. × 10.

Fig. 14. *Hippolysmata amboinensis* De Man. dactylus of third pereiopod. × 65.

as the dactylus; in the posterior legs the propodus becomes shorter in the third pereiopod it is about one and a half times as long a the carpus, in the fifth only slightly longer than that segment The posterior margin of the propodus is provided with small that of the merus with much stronger spinules.

The uropodal endopod is ovate, it is longer than th telson. The exopod has the outer margin naked and slightl convex, it ends into two posteriorly directed spines.

The present species belongs to the group of the subgenus *Hippolysmata,* which contains th species *H. dentata, durbanensis* and *multiscissa,* in which the rostrum is long and slender. Fron *H. dentata* it differs by the shape of the dactyli of the last three pereiopods, which have the posterio margin not entire but provided with spinules, from the same species and *H. durbanensis* it differ by the hand of the first pereiopod, which is much more slender; from *H. multiscissa* it is distinguishe by the smaller number of joints in the carpus of the second pereiopods. Furthermore the species i characterized by the slender rostrum and by the elongate segments of the antennular peduncle.

Distribution. The only known specimen of this species is the present specimen from Ambon

Subgenus **Lysmatella** Borradaile

Hippolysmata (Lysmatella) prima (Borradaile)

Lysmatella prima Borradaile, 1915, Ann. Mag. nat. Hist., ser. 8 vol. 15, p. 209.
Hippolysmata (Lysmatella) prima Kemp, 1916, Rec. Indian Mus., vol. 12, p. 404.
Lysmatella prima Borradaile, 1917, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 17, p. 404, pl. 58 fig. 7

Siboga Expedition

Station 47, Bay of Bima, Soembawa; April 8-12, 1899. — 2 specimens 9 and 10 mm.
Station 50, Bay of Badjo, westcoast of Flores; depth up to 40 m; April 16-18, 1899. — 1 specimen 22 mm.
Setation 77, Borneo Bank, 3° 27′ S, 117° 36′ E; dredge 59 m; June 10, 1899. — 1 specimen 17 mm.
Station 162, between Loslos and Broken Islands, westcoast of Salawati; dredge, 18 m; August 18, 1899. — 2 specimens (1 ovigerous female) 25 and 28 mm.
Station 164, west of New Guinea, 1° 42′.5 S, 130° 47′.5 E; dredge, 32 m; August 20, 1899. — 2 specimens (1 ovigerous female) 21 and 22 mm.
Station 273, anchorage off Djedan Island, eastcoast of Aroe Islands; pearlbanks, 13 m; December 23-26, 1899. — 1 specimen 10 mm.

Museum Leiden

Java Sea, 5° 20′ S, 114° 34′ E; 32-34 m depth; on a sponge; Gier No. 12 Exp. No. 2; October 3, 1908. — 1 specimen 11 mm.

Museum Amsterdam

Balikpapan, Borneo; leg. W. J. Tissot van Patot. — 1 specimen 15 mm.

The larger specimens (those of 17-28 mm) closely agree with Borradaile's and Kemp's escriptions and figure. The rostrum, which reaches beyond the antennular peduncle in these ecimens has seven to nine dorsal and 6 to 10 ventral teeth. The carpus of the second pereiopods provided with 20-24 joints. The stylocerite is small reaching about 1/3 of the basal segment of the ntennular peduncle. Some small specimens, namely those of Station 47 and 273 of the Siboga xpedition, that of Balikpapan (Museum Amsterdam) and that from the Java Sea (Museum Leiden), ffer in some respects rather strongly from the descriptions and from the larger specimens. The ostrum namely is much shorter, reaching only to or slightly beyond the end of the second segment f the antennular peduncle, it bears 7 or 8 dorsal and 2-4 ventral teeth; the form of the rostrum esembles that of the aberrant *Hippolysma vittata* specimen from the Persian Gulf figured by Kemp 1914). Furthermore the stylocerite, though in some specimens it has the same form as in the ypical *H. prima,* in other specimens is longer and reaches to or even slightly beyond the middle of he basal segment of the antennular peduncle. The carpus of the second pereiopod in three of the ecimens consists of 15 or 16 segments, in the two others it has about 20 (the exact number in one f the specimens could not be observed on account of the bad condition of this leg). As far as I an observe the specimens in all other characters agree with *H. prima,* so for instance the epipods re missing on all pereiopods, a pterygostomial spine is present on the carapace, also the form of he legs are similar to those of *H. prima.* As these aberrant forms all are much smaller than the orms which agree with the descriptions, these features perhaps only are of a juvenile nature. It is ossible, however, that the specimens are young stages of a still undescribed species.

Vertical distribution. The species lives in superficial waters and is known from depths up 59 m.

Horizontal distribution. Records in literature are: Several atolls (Haddumuti, Mulaku and

South Nilandu) of the Maldive Archipelago (Borradaile, 1915, 1917), Port Blair, Andaman Islands (Kemp, 1916). The species at present is recorded for the first time from the Malay Archipelago.

Subgenus **Exhippolysmata** Stebbing

Hippolysmata (Exhippolysmata) ensirostris Kemp

Hippolysmata ensirostris Kemp, 1914, Rec. Indian Mus., vol. 10, p. 118, pl. 7 figs. 1-4.
Hippolysmata ensirostris Kemp, 1916, Rec. Indian Mus., vol. 12, p. 403, fig. 5.
Hippolysmata ensirostris De Man, 1929, Vid. Medd. natuurh. Foren. Kbh., vol. 87, p. 128, fig. 7.
Exhippolysmata ensirostris Balss, 1933, Mitt. zool. Mus. Berlin, vol. 19, p. 85.

Museum Leiden

Padang, westcoast of Sumatra; leg. H. G. Wittenrood. — 1 ovigerous female 73 mm.
Besoeki, Java; 1865; leg. J. Semmelink. — 1 specimen 35 mm.

Museum Amsterdam

Goenoengsitoli, Nias, off westcoast of Sumatra; 1910; leg. J. P. Kleiweg de Zwaan. — 1 ovigerous female 26 mm.

My specimens agree with Kemp's (1914) description. Stebbing's *Exhippolysmata tugelae* is very closely related, if not identical with the present species. The only differences I could find between Stebbing's and Kemp's descriptions are:

1. The spinulation of the upper margin of the rostrum. The rostrum in *H. ensirostris* is provided with teeth over its entire length, while in *H. tugelae* the larger ultimate part is smooth. As Kemp stated and as is also distinct in his figures the spinulation is very variable. In my material the specimen from Padang has the rostrum almost entirely smooth, only one spine is present near its base situated at a level between the third and fourth ventral teeth, and one tooth is situated close to the apex.
2. In *H. tugelae* the telson has the last $^2/_3$ of its lateral margin provided with hairs, in *H. ensirostris* only the last $^1/_4$ of the lateral margin. In all my specimens the last $^2/_3$ of the lateral margin is provided with hairs, when these are worn away the pits for the reception of the hairs in that part of the margin remain visible. Probably in Kemp's specimens either the proximal hairs are worn away or in the figure not much attention is paid to their position.
3. In *H. ensirostris* the tip of the telson is devoid of posterior spinules, while in *H. tugelae* one pair of spinules is present there. This character seems to be the only constant one between the two species. If it nevertheless should prove to be variable, then the name *H. tugelae* must be considered as a synonym of *H. ensirostris*. It is to be regretted that in all my specimens of the present species the tip of the telson is broken. In the specimens of the var. *punctata* at my disposal no spines could be observed at the apex of the telson. I think it therefore possible that the character is constant.

All other characters mentioned by Stebbing for *H. tugelae*, as the curious spines on the inner margin of the ischium of the second pereiopod and the serrate hairs on the propodus of the

h pereiopods are also found in my specimens, which beyond all doubt belong to *H. ensirostris* l also in the specimens belonging to the variety *punctata,* which will be treated below.

The specimen from Padang, which in the shape of the rostrum shows such a large resemblance *H. tugelae,* nevertheless is included in the present species as in my opinion the character of the pe of the rostrum is of little value for distinguishing the two species; moreover my specimen is nd within the range of distribution of *H. ensirostris* and outside that of *H. tugelae;* furthermore only character, which in my opinion may be constant, viz., the presence or abscence of the spines he posterior part of the telson could not be consulted as the tip is missing in my specimen.

Vertical distribution. The species is a superficial form.

Horizontal distribution. Records in literature are: Bombay (K e m p, 1914), Colombo, Ceylon . e m p, 1914), Pondicherry (K e m p, 1914), Madras (K e m p, 1914), Puri, Orissa coast (K e m p, 16), Akyab, Burma (K e m p, 1914), Bagansiapiapi, eastcoast of Sumatra (B a l s s, 1933), Tand- ng Krawang, Bay of Batavia (D e M a n, 1929).

Hippolysmata (Exhippolysmata) ensirostris var. *punctata* Kemp

Hippolysmata ensirostris punctata Kemp, 1914, Rec. Indian Mus., vol. 10, p. 120, pl. 7 figs. 5-7.

Museum Amsterdam

Bagansiapiapi, eastcoast of Sumatra; 1912; leg. Herbst. — 3 specimens (1 ovigerous female) 82-90 mm.

These specimens are in an excellent condition; they agree with K e m p's description. The nctation of the carapace is very distinct. The rostrum is provided on its lower margin with 17-23 eth, on the upper margin with 18-20, of which the first six to eight form a crest, which, however, not sharply separated from the rest of the rostrum. The fifth pereiopod in my specimens does not hardly reaches the end of the scaphocerite. One of the specimens has the dorsal margin of the strum near the apex provided with small secondary spinules, which are placed between the larger imary ones.

Vertical distribution. The species is a litoral form.

Horizontal distribution. In literature only K e m p's records from Sandheads (Ganges delta), hongwa (Burma) and Green Island (Tenasserim) are known.

Merguia Kemp, 1914

The only species of the present genus is abundantly represented in the present collections.

Merguia oligodon (De Man) (fig. 15)

Hippolyte oligodon De Man, 1888 b, Journ. Linn. Soc. Lond. Zool., vol. 22, p. 277, pl. 18 figs. 1-6.
Merguia oligodon Kemp, 1914, Rec. Indian Mus., vol. 10, p. 121, pl. 7 figs. 8, 9.
Merguia oligodon Kemp, 1925, Rec. Indian Mus., vol. 27, p. 338.

Siboga Expedition

Station 47, Bay of Bima; reef; April 8-12, 1899. — 1 specimen 19 mm.
Station 50, Bay of Badjo, westcoast of Flores; April 16-18, 1899. — 2 specimens 16 and 25 mm.
Station 86, anchorage off Donggala, Paloe Bay, Celebes; shore; June 18 and 19, 1899. — 2 specimen 13 and 15 mm.
Station 115, eastside of Pajoenga Island, Koeandang Bay; reef; July 9-11, 1899. — 1 specime 13 mm.

Snellius Expedition

Semaoe near Hainsisi, Timor; November 27, 1929. — 2 specimens 21 and 23 mm.
Tanah Djampea; shore and reef; February 21 and 22, 1930. — 1 specimen 23 mm.
Taliaboe (Pasih Ipah), Soela Islands; shore; March 19, 1930. — 1 specimen 19 mm.
Haroekoe; shore and reef; May 3-7, 1930. — 11 specimens (included ovigerous females) 17-27 mm
Morotai; June 3-10, 1930. — 1 specimen 13 mm.
Islet east of Bongao; shore; September 16, 1930. — 1 specimen 25 mm.
Islet near Menado; September 25, 1930. — 1 specimen 24 mm.

The present species seems to be not rare in the Malay Archipelago, as numerous specimens are found throughout the region explored. It is therefore surprising that the species till now was

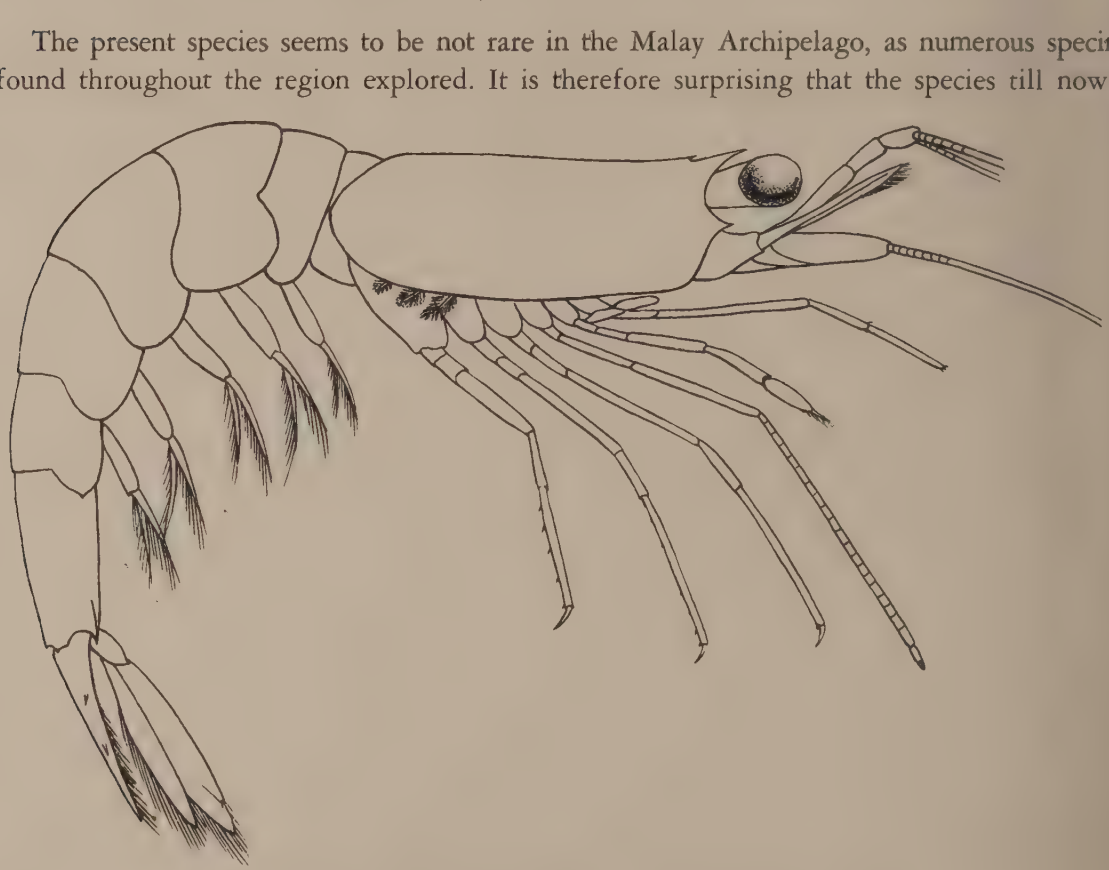

Fig. 15. *Merguia oligodon* (De Man). juvenile specimen. × 13.

only known from two specimens, both collected in the Mergui Archipelago. The species at first was extensively described by De Man as *Hippolyte oligodon,* while Kemp gave some important additional details of the species and placed it into a new genus *Merguia.* My specimens agree with

De Man's description. The number of teeth on the upper margin of the rostrum nearly always is three, as in De Man's and Kemp's specimens, sometimes four teeth may be observed, three of which are placed on the rostrum proper and in young specimens sometimes only 1 or 2 teeth are present. The number of carpal joints in the second pereiopods in my material varies between 20 and 25.

Two young specimens, viz., those of Station 115 (Siboga Expedition) and from Morotai (Snellius Expedition) show some curious differences from the other specimens (fig. 15):

a The rostrum is short and bears only one tooth dorsally.
b The antennal peduncle is shorter.
c The first maxillipede reaches only slightly beyond the scaphocerite.
d The third maxillipede and the first pereiopods bear a reduced exopod.

It is interesting to compare Kemp's (1916, p. 403, fig. 5) description of a young stage of *Hippolysmata ensirostris* with the present young specimens. There too the rostrum is shorter and less developed than in the adult specimens and also exopods are present on the pereiopods. Therefore the features in which the small specimens of *Merguia oligodon* differ from the larger ones in all probability must be considered to be of a juvenile nature. It is strange, however, that the specimens from Station 86 of the Siboga Expedition which measure 13 and 15 mm do not show the above characters.

Vertical distribution. The species is a litoral form.

Horizontal distribution. Except from the above localities throughout the entire Dutch part of the Malay Archipelago the species is only known from Elphinstone Island, Mergui Archipelago (De Man, 1888 b; Kemp, 1914) and from Jack and Una Island, Mergui Archipelago (Kemp, 1925).

Family **Rhynchocinetidae** Ortmann

The present family consists of one genus with six species. Gordon (1936 a) gave a review of this genus, with remarks on several species and with a key to all of them.

The following species are known:

Rhynchocinetes H. Milne Edwards 1837

Type: *Rhynchocinetes typus* H. Milne Edwards.

alssi Gordon, 1936 a. Distribution: New Zealand (off North Cape); Juan Fernandez (Masafuera). 80-128 m depth.

urbanensis Gordon, 1936 a. Distribution: Durban. Litoral form.

endersoni Kemp, 1925. Distribution: South India; Bali; Fiji. Litoral form. (Vid. p. 80).

igens Gordon, 1936 a. Distribution: Madeira; Bermuda. Litoral form.

ugulosus Stimpson, 1860. Distribution: Japan; Malay Archipelago; South and East Australia; New Zealand; Hawaiian Archipelago Litoral form. (Vid. p. 79).

ypus H. Milne Edwards, 1837 c. Synonym: *Rhyncocinetes typicus* Dana, 1852 b. Distribution: Coasts of Peru and Chile. Litoral form. (Vid. p. 78).

In the collections examined two species are represented:

Rhynchocinetes typus H. Milne Edwards

Rhynchocinetes typus H. Milne Edwards, 1837 b, Hist. nat. Crust., vol. 2, p. 383.
Rhynchocinetes typus H. Milne Edwards, 1837 c, Ann. Sci. nat. Zool., ser. 2 vol. 7, p. 168, pl. 4 C.
Rhynchocinetes typus H. Milne Edwards & Lucas, 1843, Orbigny's Voy. Amér. mérid., vol. 6 pt. 1, p. 36, pl. 17 fig. 1.
Rhynchocinetes typus White, 1847, List Crust. Brit. Mus., p. 130.
Rhynchocinetes typus Nicolet, 1849, Gay's Hist. fis. pol. Chile, Zool., vol. 3, p. 216, pl. 1 fig. 7.
Rhynchocinetes typus Gibbes, 1850 a, Proc. Amer. Ass. Adv. Sci., vol. 3, p. 197.
Rhynchocinetes typus Lucas, 1851, Hist. nat. Crust. Arachn. Myriap., p. 188.
Rhyncocinetes typicus Dana, 1852 b; U.S. Explor. Exped., vol. 13, p. 568.
Rhyncocinetes typicus Dana, 1855, U.S. Explor. Exped., vol. 13, atlas, p. 12, pl. 36 fig. 7.
Rhynchocinetes typus Girard, 1855, U.S. Naval Explor. Exped. S. Hemisph., vol. 2, p. 259.
Rhynchocinetes typus Heller, 1865, Reise Novara, Zool., vol. 2 pt. 3, p. 120.
Rhynchocinetes typus Cunningham, 1870, Trans. Linn. Soc. Lond., vol. 27, p. 497.
Rhynchocinetes typus Miers, 1876 b, Catal. Crust. New Zeal., p. 77.
? non *Rhynchocinetes typus* Haswell, 1882, Catal. Aust. Crust., p. 180.
Rhynchocinetes typus Filhol, 1885, Bibl. Éc. haute Étud., vol. 30 pt. 2, p. 52.
Rhynchocinetes typus Filhol, 1886, Miss. Ile Campbell, Zool., vol. 3 pt. 2, p. 430.
Rhynchocinetes typus Ortmann, 1890, Zool. Jb. Syst., vol. 5, p. 507, pl. 37 figs. 7 d, f-i.
Rhinococynetes typus Sharp, 1893, Proc. Acad. nat. Sci. Philad., 1893, p. 118.
? *Rhynchocinetes typus* Casto de Elera, 1895, Catal. Faun. Filip., vol. 2, p. 568.
non *Rhynchocinetes typus* Stead, 1898, Zoologist, ser. 4 vol. 2, p. 209.
non *Rhynchocinetes typus* Borradaile, 1899, Willey's Zool. Res., vol. 4, p. 415.
Rhynchocinetes typus Thompson, 1901, Catal. Crust. Mus. Dundee, p. 20.
Rhynchocinetes typus Lenz, 1902, Zool. Jb. Syst., suppl. vol. 5, p. 734.
Rhynchocinetes typus Porter, 1903, Rev. Chil. Hist. nat., vol. 7, p. 152.
Rhynchocinetes typus McCulloch, 1909, Rec. Aust. Mus., vol. 7, p. 312.
Rhynchocinetes typus Rathbun, 1910, Proc. U.S. Nat. Mus., vol. 38, p. 562, pl. 52 fig. 2.
non *Rhynchocinetes typus* Borradaile, 1916, Nat. Hist. Rep. Brit. Antarct. Exped., Zool., vol. 3, p. 85.
non *Rhynchocinetes typus* Stebbing, 1917, Ann. Durban Mus., vol. 2, p. 27, pl. 6.
non *Rhynchocinetes typus* Balss, 1924 a, Skottberg's Nat. Hist. Juan Fernandez, vol. 3, p. 331.
Rhynchocinetes typus Gordon, 1936 a, Proc. zool. Soc. Lond., 1936, p. 83, figs. 5 a, d, 6 a, b.

Museum Leiden

Indian Ocean; don. H. Milne Edwards. — 1 specimen 87 mm.

The specimen in the collection of the Rijksmuseum van Natuurlijke Historie at Leiden perhaps is a cotype of the species: it namely was obtained from H. Milne Edwards out of the collections of the Paris Museum and like the type it bears the wrong indication that it is collected from the Indian Ocean. The specimen is in a good condition and shows all characters mentioned by its author and by Gordon (1936 a).

Many of the specimens mentioned in literature as *Rhynchocinetes typus* do not belong to the present species; so for instance the specimen of Borradaile (1899) in all probability belongs to *Rhynchocinetes rugulosus,* those of Borradaile (1916) and Balss (1924 a) belong to

balssi, that of Stebbing (1917) is *R. durbanensis*. Those of Casto de Elera (1895) and ne of Sharp (1893) probably also do not belong to this species, but too little is known about eir characters to ascertain their real identity.

Vertical distribution. The species is a litoral form.

Horizontal distribution. The species in all probability is confined to the westcoast of South merica. Records in literature are: Lobos de Afuera, Peru (Rathbun, 1910), Chile (White, 47; Nicolet, 1849; Heller, 1865; Ortmann, 1890; Sharp, 1893), Iquique, Chile enz, 1902), Coquimbo, Chile (Cunningham, 1870; Porter, 1903), Valparaiso, Chile (Milne dwards & Lucas, 1843; Dana, 1852 b; Ortmann, 1890; Thompson, 1901; Gordon, 36 a), Juan Fernandez (Lenz, 1902), Cavancha, Chile (Lenz, 1902). The specimens recorded Lenz from Juan Fernandez perhaps must be referred to *R. balssi*. The specimens recorded by Milne Edwards (1837 b) from the Indian Ocean in all probability are wrongly labelled; e specimen recorded by Miers (1876 b) from New Zealand is, as stated by Kemp (1925) who amined it, a real *R. typus*, but probably also is wrongly labelled. The records of this species from ew Zealand by Filhol (1885, 1886) are based on Miers's statement. Miers (1876 b) also entioned the species from Australia and it therefore is inserted in Haswell's (1882) list, ese specimens probably must be referred to *R. rugulosus*, just like Borradaile's (1899) ecimen from Lifu, Loyalty Islands and Stead's (1898) specimens from Port Jackson. As already ated above the specimens mentioned by Borradaile (1916), Stebbing (1917) and Balss 1924 a), moreover do not belong to the present species. Furthermore specimens, which are recorded nder the name *R. typus*, but which probably do not belong to that species are reported from the llowing localities: Red Sea (Sharp, 1893), Philippine Islands (Casto de Elera, 1895), New ealand (Sharp, 1893).

Rhynchocinetes rugulosus Stimpson

Rhynchocinetes rugulosus Stimpson, 1860, Proc. Acad. nat. Sci. Philad., 1860, p. 36.
? *Rhynchocinetes typus* p.p. Miers, 1876 b, Catal. Crust. New Zeal., p. 78.
? *Rhynchocinetes typus* Haswell, 1882, Catal. Aust. Crust., p. 180.
Rhynchocinetes rugulosus Haswell, 1882, Catal. Aust. Crust., p. 180.
Rhynchocinetes rugulosus Whitelegge, 1890, Journ. Roy. Soc. New S. Wales, vol. 23, p. 223.
non *Rhynchocinetes rugulosus* Henderson, 1893, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 5, p. 438.
non *Rhynchocinetes rugulosus* Thurston, 1895, Bull. Madras Govt. Mus., vol. 3, p. 120.
? *Rhynchocinetes typus* Stead, 1898, Zoologist, ser. 4 vol. 2, p. 209.
? *Rhynchocinetes typus* Borradaile, 1899, Willey's Zool. Res., vol. 4, p. 415.
Rhynchocinetes rugulosus Rathbun, 1906, Bull. U.S. Fish Comm., vol. 23 pt. 3, p. 911, fig. 64.
Rhynchocinetes rugulosus McCulloch 1909, Rec. Aust. Mus., vol. 7, p. 310, pl. 89 figs. 1-8.
Rhynchocinetes rugulosus Chilton, 1911, Trans. Proc. New Zeal. Inst., vol. 43, p. 548.
Rhynchocinetes rugulosus Edmondson, 1925, Bull. Bishop Mus. Honolulu, vol. 27, p. 6.
Rhynchocinetes rugulosus Hale, 1927 b, Crust. S. Aust., vol. 1, p. 55, fig. 49.
Rhynchocinetes regulosus Kubo, 1936, Bot. Zool. Tokyo, vol. 4, p. 1887, figs. 1, 2.
Rhynchocinetes rugulosus Gordon, 1936 a, Proc. zool. Soc. Lond., 1936, p. 85, fig. 6 c, d.

Siboga Expedition

Station 144, anchorage off Salomake (= Damar) Island; coral bottom and lithothamnion; depth 45 m; August 7-9, 1899. — 1 specimen 18 mm.

Snellius Expedition

Station 60*, Basilan Strait, 6° 58'.0 N, 121° 52'.5 E; trawl; depth 72-80 m; September 5, 1929. — 1 specimen 31 mm.

The specimens show all characters mentioned by Gordon (1936) for the species. It is the first time that the species is recorded from the Malay Archipelago, unless the specimen mentioned by Castode Elera (1895) as *Rhynchocinetes typus* in reality belongs to the present species.

As already pointed out under *R. typus* the specimens mentioned by Miers (1876 b), Haswell (1882) and Stead (1898) from Australia and that recorded by Borradaile (1899) from Lifu, may belong to the present species. *R. rugulosus* of Henderson (1893), which is also mentioned by Thurston (1895), belongs to *R. hendersoni* Kemp (1925). Like in the previous species a reexamination of the specimens cited in literature is needed because many of them may belong to other species.

Vertical distribution. The species is a litoral form.

Horizontal distribution Records in literature are: Japan (Kubo, 1936), ? Australia (Miers, 1876 b; Haswell, 1882), St. Vincent Gulf, S. Australia (Hale, 1927 b), Port Jackson, New S. Wales (Stimpson, 1860; Haswell, 1882; Whitelegge, 1890; Stead, 1898), Sydney (McCulloch, 1909), Lord Howe Island (McCulloch, 1909), Kermadec Islands (Chilton, 1911), ? Lifu, Loyalty Islands (Borradaile, 1899), Laysan (Edmondson, 1925), French Frigate Shoal (Rathbun, 1906; Edmondson, 1925).

Rhynchocinetes hendersoni Kemp

Rhynchocinetes rugulosus Henderson, 1893, Trans. Linn. Soc. Lond. Zool., ser. 2 vol. 5, p. 438.
Rhynchocinetes rugulosus Thurston, 1895, Bull. Madras Govt. Mus., vol. 3, p. 120.
Rhynchocinetes hendersoni Kemp, 1925, Rec. Indian Mus., vol. 27, p. 265, figs. 3-7.
Rhynchocinetes hendersoni Boone, 1935, Bull. Vanderbilt mar. Mus., vol. 6, p. 109, pls. 28, 29.
Rhynchocinetes hendersoni Gordon, 1936 a, Proc. zool. Soc. Lond., 1936, pp. 82, 88.

The present species, though not represented in the collections at hand, is mentioned here as it is recorded in literature from the Dutch East Indies (Boone, 1935). The figures given by Boone of the present species are rather bad. Comparison of her description and figures with those of Kemp (1925) show that Boone's specimen indeed belongs to the present species, but that important characters are omitted or incorrectly drawn in the figure; so for instance nothing is visible of the articulation between rostrum and carapace, the spine at the posterior margin of the fifth abdominal segment is not indicated, the form of the antennular peduncle is altogether incorrect.

Vertical distribution. The species is a litoral form and lives on coral-reefs.

Horizontal distribution. Records in literature are: Tuticorin, S. India (Henderson, 1893; Thurston, 1895), Pamban and Kilakarai, Gulf of Manaar (Kemp, 1925), Temoekoes Roads, Bali (Boone, 1935), Fiji (Kemp, 1925).

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text	date	plates		
pp. i-xvii (preface by De Siebold)	1850			
pp. i-xxxi (introduction by De Haan)	1849			
pp. 1-24 (Decas I)	1833	pls. 1-8		pls. 1′, 2′
pp. 25-64 (Decas II)	1835	pls. 9-17		
pp. 65-72 (Decas III)	1837	pls. 18-24, A-F	pls. 25-32	
pp. 73-108 (Decas IV)	1839	pls. G, H		
pp. 109-164 (Decas V)	1841	pls. 33-46		
pp. 165-196 (Decas VI)	1849		pls. 47-55, I-Q	
pp. 197-243, errata (Decas VII)	1849			

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